LEARNING AND RELEARNING *

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SOME of you have caught the prevalent fever and have been discussing the curriculum, with a view to improving the machinery by which you have been processed. This is of course sound, on the principle that

> " The toad beneath the harrow knows
> Exactly where each tooth-point goes ".

Some of you have said that you think that staff-student relations could be improved. Obviously this is true, but equally obviously, it has been true for quite a long time and I wonder what has brought it to the fore at the present moment. It might be the result of casting envious glances at the older universities south of the Border where tutorial methods have long been their pride. Or it might be that you feel more or less insecure when Medicine is so rapidly changing that you cannot help wondering how long the readymade opinions and statements which you have absorbed in lectures are likely to remain valid. I want to say how well founded I think these fears are, but I should like first to commend to the Senatus a way of improving staff-student relations which could be done without costing the University a penny. This is to enact for this University one of the Laudian statutes which were in force in the University of Oxford for over two hundred years. The statute in question begins by warning lecturers against talking so fast that the hearers cannot take notes and continues:

> " Finitis insuper lectionibus, Professores aliquantisper in Scholis commorentur, et si scholaris vel auditor voluerit arguere contra ea quae fuerant ab illo dicta inter legendum, vel al as de aliquo dubitet, illum benigne audiant difficilitatibus et dubiis sibi motis satisfacient."

As Latin is not compulsory for entrance to this medical school:

> " At the end of the lectures, Professors shall linger a while in the Schools, and if any scholar or hearer wishes to argue against things which were said in the lecture, or should anyone doubt other matters the lecturer shall hear him benignly and shall satisfy him concerning the doubts and difficulties raised."

I have hopes of seeing professors pacing with dignity outside their lecture-theatres while students come and pluck their sleeves to have their doubts benignly set at rest.

Today, however, these are things of the past and you are much more concerned with starting at last the practice of your professions To the future doctors I do not presume to offer advice on the most important point of all, how you should regard each individual patient and why you should put his interests first. Some of you will derive an attitude and approach directly from the Christian religion, some of you will have a regard for your patient drawn from the current more or less vague humanism, and some may have to widen your experience of life, love, pain, and suffering, before patients shed that one dimensional cardboard quality which they are apt to acquire in hospitals, and become alive and real to you. You will already have learnt much by precept and example from your teachers of the sympathetic understanding which patients hope for from their doctor.

The other point of great importance with which I am not concerned is the difference between theoretical knowledge and the knowledge which has run down into your fingertips and can be used. This you have plenty of time to learn for yourselves, since a grandmotherly Government has decided that today you receive merely a Provisional Licence and that for the next twelve months you will wear an invisible " L ".

I wonder very much, however, how you will keep your future knowledge of medicine matching the medicine of the future.

When knowledge was changing more slowly, this question was no doubt pointless because the practice of medicine is in part an art, and a practitioner learns his art by practising it. Of course medicine is an art, in the sense that sailing a dinghy is an art, that in both cases you have to take decisive action on the basis of incomplete information. There is however a science of meteorology and an applied science of navigation and both are perfected as the years pass and neither may be neglected. The applied arts tend to be conservative. I have recently been shown some prescriptions of William Harvey, and it is depressing to find him compounding with great elegance purges designed to remove from the body phlegm, black and yellow bile, the patient to be bled one day and purged the next. Although he had discovered the circulation of the blood, this had had as yet no impact on treatment, and what else was there to do but to follow the best practice of the day? Since his time, the advance of knowledge in narrow sectors has frequently outrun the possibility of applying it in treatment.

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I can remember hearing Sir Thomas Lewis say that there was only a narrow bridge which connected the art and science of medicine, and that this would long continue to be the case. And yet since his death great causeways have been pushed out to connect medical science and medical practice. I have no doubt that this process will continue at an increasing rate in your professional lifetime, and that it will often be uncomfortable and disturbing. I think one can see clearly why this should be so if we compare medicine and engineering.

The two professions have more in common than we usually trouble to think. Even their subdivisions run parallel. Many of the principles of constructional engineering apply to the construction and repair of the human framework. The study of the horsepower developed by a human being taking exercise is a respectable branch of physiology. Ideas from electrical and communication engineering are being increasingly used to elucidate the working of the nervous system. Problems of the absorption of gases by liquids are common to the chemical engineer and to respiratory physiologists. There is of course hydraulic engineering of pumps and the flow of liquids in tubes, and there is sanitary engineering. There are even those who are disrespectful enough to refer to

* Based on the Promoter's Address delivered at the Graduation Ceremonial of the University of Edinburgh on July 13, 1959.

some aspects of the surgery of unblocking of tubes and the closing of leaks as branches of the higher plumbing. There is, however, one way in which the engineer is in a far stronger position than the doctor. On the whole there is available to him a profound knowledge of the properties of his materials, and even if the physicists discover a new fundamental particle or two it is unlikely to make any difference to those statistical properties of materials with which the engineer works.

It is far otherwise with us. We have not the same profound knowledge of our far more complex basic material. We are learning every day more of the ultrastructure of the cell, how it metabolises, grows, and divides. Some of this new knowledge is entering medicine at a remarkable rate. New techniques using chromosome markers have already made possible the treatment of accidental radiation injury in man and may make radical treatment of leukæmia a possibility in due course. The new methods of chromosome counting in tissue squashes have reduced the accepted number of chromosomes in man from 48 to 46, which is no doubt a point of purely academic interest, but have also made it clear that mongolism is related to a visible chromosomal injury, and there is very active search at the moment for other diseases in which there is chromosomal reduplication or injury.

Clearly there are two categories of new knowledge in medical science. In the easier one to accept, facts which we have been forced to acquire in our preclinical or premedical work are suddenly seen to have some clinical significance. Starling's Law of the Heart was in this category when I was a student. Suddenly about 1945 the cardiologists saw its significance in heart-failure and it has been the headstone of the corner in their teaching ever since. In the past few years the clinical description of the respiratory diseases has been made much more exact by the taking over of an elaborate terminology and corresponding methods from American physiologists.

The foundations of our knowledge of salt deficiency were laid when I was a student, and I am proud to have been one of the experimental rabbits in some of the early and I think conclusive work by McCance on the subject. This work was seen to be important in heat exhaustion and dehydration in the Second World War, but its importance in surgery was only realised about 1950 or thereabouts. Now quantitative diagnosis and treatment are possible and the slide-rule can be of more value in your pocket than a stethoscope. There is no real difficulty in accepting the practical application of things we have already heard about even though sometimes we feel we are being pushed faster than we want to go and that old-fashioned methods of guesswork and judgment are good enough.

What is much more difficult to take is the new knowledge which is new even to the basic sciences, which one has never heard of as a student and which suddenly becomes important in medicine. The new work on human chromosomes is a case in point.

At the moment large tracts of medicine have been systematised by the use of ideas recently drawn from physiology and biochemistry, and really radical changes in outlook in the near future are unlikely to come from these sciences. Nor have there been many fundamental changes in physical chemistry in the past twenty years which bear on biological problems. On the other hand, in immunology, including problems of tissue immunity, in the fine structure of cells exposed by the electron microscope, and in the biochemistry of cell growth and division we can expect the really startling advances which will make us need to go back to school or at least to medical school before we can understand them.

* * *

To complete this gloomy picture, not only will your present knowledge become inadequate to treat medical conditions which you know, there will no doubt be a change in the diseases which you have to treat as some grow commoner and others disappear. How are you to deal with the situation when the knowledge you have so painfully acquired becomes a diminishing asset?

Firstly, I hope you will reawaken your curiosity to know something of how the human machinery works in health and disease. This is one of the things which originally brought you into medicine. It is one of the saddest aspects of the medical curriculum that though we do not know the best way to encourage you to learn, we do seem to know something of how to kill your curiosity. The eager enthusiasm of the first two years gives place to the hopeless grind of the third year and by then even the entry to the wards stimulates your determination more than your curiosity. By the time you have been invited to attend nearly 2000 lectures, you develop a keen eye for the difference between information which will be useful in finals, and merely useless knowledge. You are now free of this enforced drudgery. Even if you take higher degrees, they will be in narrower fields of your own choice. You will be free to learn what you like and to remember what you like. Learning because you want to know the answer instead of learning because you have to, remains possible well on into middle-age when learning by rote has become difficult. I suggest that you should keep the scope of your curiosity reasonably wide, and that it should include the biological sciences.

Secondly, I am old-fashioned enough to think that there is something to be said for the view that all doctors should have the ambition to increase our knowledge of the science of medicine as well as to improve its practice. I know that there are many objections, that research nowadays requires enormous equipment and long training, that Harvey Cushing's insistence that every surgeon should have his research problem has led to sometimes pointless experimentation, that people will do a research problem merely as a stepping-stone to higher things. This has its dangers: as Eliot said in a somewhat different content: "For those who serve the greater cause may make the cause serve them, Still doing right." Yet when all things have been said if after weighing up the situation, one finds that one has better ideas, or more likely, better tools than were available to one's predecessors, then one ought to try to add to our existing knowledge. Even if it leads to nothing else, the effort will help one to judge the publications of others with more insight and perhaps with more charity.

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I hope these considerations are a present-day version of what Lord Lister had in mind when he said "If you are not willing to learn and unlearn all your life through, you should give up medicine and take up a third-rate trade." Learning is difficult enough, unlearning and relearning is not only difficult but is opposed by habit and false pride. It is nevertheless the price to be paid if you wish to be a worthy member of a learned profession.

THE ROLE OF THE PÆDIATRICIAN IN MENTAL ILLNESS *

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AT the last International Congress at Copenhagen Dr. D. W. Winnicott pointed out that in knowledge and practice of psychiatry pædiatricians had lagged far behind other workers in child care. In the light of our own clinical experience we wish to discuss our usefulness and limitations in problems of child psychiatry and to consider how the training of a new generation of pædiatricians might be improved. We four British pædiatricians are, in fact, very different people and yet we have found to our interest that we have a remarkable unanimity of outlook on this subject.

In the past a pædiatrician could earn an honourable living without knowing anything of psychiatry. But serious organic disease, which used to present the most immediately pressing problems, has declined so much that the pædiatrician finds that emotional disorders must now be his major preoccupation. Unfortunately, at any rate in Britain, he has had almost no formal training in his student days to equip him to deal with such problems as behaviour disorders, psychosomatic illness, and the emotional aspects of physical disease and medical care which constitute at least half his work. That he turns with enthusiasm to the unconquered physical problems of the newborn and the congenitally malformed, to organic nervous disorders, and neoplastic disease is not only because of their intrinsic importance, but also because he can approach them with personal comfort.

It was probably a mere accident in terminology that in Freud's time led to neurosis being treated by neurologists who were unsuited by training, and also perhaps by temperament, for this work. Similarly it may be accidental that we who are supposed to be experts on physical growth should be expected to handle problems arising from distortion of the normal process of emotional growth. We are as ill equipped for this task as were the neurologists to treat neurosis.

Problems of Diagnosis

Nevertheless, because psyche and soma interact so closely in childhood, pædiatricians have to accept the care of children whose symptoms they feel to have at least in part an emotional origin—sometimes because psychiatric help is not available, sometimes because the parents can at first see the illness only in physical terms, sometimes because the physical aspects of the illness demand attention in themselves. Faced with an emotionally ill child the pædiatrician must make up his mind whether to deal with the situation himself or refer the child to a psychiatrist. Of course he has first to decide if an emotional problem exists, to what extent it disturbs the family, and what are likely to be its consequences. But the decision about referral must be made early and before the pædiatrician himself becomes too deeply involved.

To be able to make this decision the pædiatrician must first have some idea of the meaning of mental health and of the stages and their variants through which a normal child passes to reach emotional maturity.

Secondly he must provide a setting in which a parent can talk. Most of the information on which he is to base his decision will have been derived from accurate history-taking, and, as Dr. Winnicott says, the pædiatrician has much to learn here from the social worker. The essential basis of history-taking is a sympathetic understanding that if a mother brings her child to the doctor a problem must exist, even if it is not the overt complaint. It is also essential that the doctor's relationship with the parent should be one of personal equality and not of critical superiority. The days of the Olympian physician are past. The pædiatrician must take notes in order (as Dr. Winnicott says) to be able to forget; but he must know just when to put his pen down on the desk; for otherwise he will smother at birth the most important parts of the story. He must be unhurried, or he will be tempted to ask questions. The question-and-answer type of history-taking is valueless, and likely only to conceal the real story.

The diagnosis of a psychiatric disorder must be based on positive evidence and not simply on exclusion of organic disease. Everyone knows examples of basically physical illness that have been treated by a psychiatrist, but it is a defect of our medical training that we are not taught that the reciprocal error is much commoner and may in the long run have more serious consequences. In British medical schools the student is taught to exclude organic disease by every means possible. A well-known vulgar saying about rectal examination is "If you don't put your finger in it, you'll put your foot in it". In the setting of pædiatrics this approach to medicine is thoroughly bad. Sometimes the immediate diagnosis of organic disease is important to preserve life or prevent serious disablement, but often a search for a physical explanation of symptoms is made only to prevent a physician appearing foolish in the eyes of his colleagues. The pædiatrician must be prepared to look foolish in the best interest of his patients. In the detection or exclusion of physical illness, time will often replace elaborate physical examination and special investigation, and in the meantime nothing will have been lost to the patient. In contrast, a relentless search for organic disease will obscure the true issue to parents and child and provide an escape from reality. The possibility of organic disease underlying behaviour disorders must of course never be forgotten, but when the pædiatrician has good reason to suspect a primary emotional disorder he must have the courage of his convictions.

Having diagnosed an emotional disorder, he is faced with the question of referral to the psychiatrist. At once he finds himself in difficulties based on ignorance—an ignorance about prognosis not peculiar to the physically

* Dr. Tizard read this paper on July 21 as a joint contribution to a plenary session of the IX International Congress of Pædiatrics at Montreal.

orientated doctor, but shared by the psychiatrist.

It is safe to say that all children at some time have emotional disturbances; and to overcome these is presumably part of the normal development of personality and character. Hence it is not necessary that every child with an emotional problem should be seen by a doctor, let alone a psychiatrist; and in any case there are not enough psychiatrists to make this possible. Our main concern should not be to remove symptoms, but to understand what caused them and to prevent serious mental breakdown in adult life. But is the child with these symptoms likely to be the one who breaks down in adult life? Such symptoms are, after all, the child's reaction to stress, as cough and fever are to infection; and it may be that the children who do not react to what is unsatisfactory in their environment, or whose parents do not become concerned by their symptoms, are in the greatest need of help. In other words, the bulk of future neurotics and psychotics will perhaps be found among the children never seen by the pædiatrician. It would be of great importance to know which adults with mental illness had symptoms in childhood. Those who have the opportunity of watching an unselected group of children throughout childhood and noting the absence as well as the presence of symptoms have here an important contribution to make. It is easy for the pædiatrician to be deceived by what Dr. Winnicott calls the "false self" in the child and to mistake it for balanced emotional health.

How the Pædiatrician Can Help

Referral to a psychiatrist may be considered necessary if the symptoms are an intolerable nuisance to the child, his family, or both. More often, however, the decision should be made on the pædiatrician's assessment of the total environment. If the environment is normal and the child seriously disturbed, the illness probably dates from early life and certainly warrants referral. Equally, if the history reveals a gross environmental disturbance, which the parents cannot themselves resolve, there are only three possible ways of dealing with the situation, and for each of them expert handling is necessary. The child may need personal treatment over a long period to enable him to cope with the abnormal environment; or one or both parents may need psychiatric treatment; or the child may have to be removed to a new environment—a change which may alter the whole course of his life. Most pædiatricians will recognise their inadequacy for long-term psychotherapy of child or parents. But we believe that too few pædiatricians appreciate that the apparently simpler solution of removing a child from home, school, or parent is one which, in fact, requires the greatest skill and closest consideration.

In most cases of psychological disorder the pædiatrician will, and indeed must, try to help the family without the aid of a psychiatrist. It is clear that he can help a good deal, but he must know his limitations, and *primum non nocere* should be his motto. We believe the pædiatrician should not advise parents on the upbringing of their children nor in the management of behaviour disorders. Each individual is unique both genetically and in the sum of experience. Since we all differ in capacity and disposition, for no two individuals will the ideal environment be the same. In general we believe that parents who want their children give them what is needed for their emotional development, and that the parent is likely to know far better than the doctor how to deal with a problem of behaviour. A pædiatrician's training does not enable him to dogmatise about the management of children, far less to appreciate how principles should be modified in varying circumstances. He is apt to fall back on experience with his own children. As far as they were concerned he is probably right, but for other children his personal experience may well be misleading. A doctor may also believe that he is qualified to give decisions and advice about other people's children simply because he has done so with apparent impunity for many years. But repeated decisions do not necessarily imply experience in the sense of comprehending their consequences. Where experience does prove of value is in enabling a doctor to help patients without giving dogmatic advice, a thing which the young doctor finds almost impossible.

If the pædiatrician is not to advise he must be able to explain, to sympathise, to approve, but, above all, to listen. The effect on the parents may be that they feel they have received advice, but in fact the pædiatrician has made it easier for them to see the issues and make their own decisions: he has helped them to contain the situation. This attitude is beautifully illustrated by Tolstoy in his portrait of General Kutúzov in *War and Peace*. He seldom gave orders to his commanders in the field, did not meddle, and did not moralise, but calmly sat by, and, by himself accepting responsibility, enabled his officers to act responsibly.

We have already said that pædiatricians should not give parents advice about the management of normal or difficult children. They should not give direct advice even about infant-feeding. This is the age of the expert, and such is his authority that it is not uncommon to hear a mother say "Am I allowed to do that?" about some change of regime for her own baby. For healthy family life the mother should feel that she is in charge of her child, that it is for her to make decisions and not "they". By not giving advice about feeding, the pædiatrician will soon learn that infants can do well on unusual diets and regimes. If he knows that a mother is doing the wrong thing, he must provide information rather than advice, so that it is she who makes the decisions. These considerations apply equally to fathers. It is only too easy for a pædiatrician to interpose himself between a father and his family; nothing should be done to detract from the father's authority.

Today the word "reassurance" has a slightly unfortunate connotation, suggesting the futile, "don't worry" approach. But parents' anxiety about their children can sometimes be caused by a misunderstanding of what is normal. The pædiatrician may not know enough about emotional development, but he does know something of the variations and vagaries of behaviour and accomplishments in normal children, and on occasion he can be genuinely reassuring.

The pædiatrician's relation to the child is more intricate; for it is easier to help parents to deal with a child than to help a child to deal with parents.

Probably one of the reasons why a doctor takes up pædiatrics is that he knows himself to be "good with children" and derives considerable satisfaction from this. But the doctor who is good with children is not always aware how important a place in a child's life he may come to occupy. A pædiatrician may attract children

with the best conscious motives, when in fact he is satisfying his own self-esteem at the expense of his patients' real interest. He should use his powers over children with great restraint, in order to avoid an undesirable degree of what the psychiatrists call transference. It is relatively easy for the psychologically untrained pædiatrician, by the exercise of patience and sympathy, to learn by conversation or by drawings something of a child's subconscious thought processes. But, having done so, he will not know how to handle the situation; and this may lead to a painful and even damaging experience for the child. Again, having learnt some aspect of the child's inner life, the pædiatrician may find himself in the dilemma of letting down the child by telling the parents or, by not doing so, of assuming the role of a better parent in the child's eyes.

A New Kind of Training

If the training of doctors is to be improved, so that they may be better equipped to deal with the problems which we have discussed, any changes made in the curriculum must not lead to a detoriation in their competence to deal with physical illness.

In most British medical schools the medical curriculum is organised and directed by doctors who have been trained exclusively in organic medicine. As a result the student's interest in personality as an object of scientific study is suppressed, while his mind is burdened with detailed knowledge which in practice concerns only a trained specialist. But psychiatry should no longer be looked on solely as a specialty, and should pervade all teaching of clinical medicine. This ideal could be gradually achieved by introducing psychodynamically trained physicians into the undergraduate medical schools. Because psychoanalytical theory is based on the study of emotional development, a personal analysis would seem to be a more suitable preparation for this kind of teaching than the conventional training in adult psychiatry which concentrates on diagnosis and physical treatment. In this field, more than in any other, it will be better to go slowly and limit such appointments to first-class men, rather than to recruit too quickly and bring this concept of medical education into disrepute. In the immediate future it may well be that no more can be done than to make the undergraduate aware of the problems of emotional development and of the influence of heredity and environment. A change in orientation of the whole medical training could well begin in the pædiatric department, since it is there that emotional growth and family relations can most easily be studied.

If these changes are made in the curriculum, the new generation of postgraduates may well demand opportunities for psychoanalytical training, when this is appropriate to their work, and a personal analysis may in the future become a necessary or desirable part of training for most family or pædiatric practitioners. For the present one would at least like to see some pædiatricians fitting a personal analysis into their postgraduate training.

To those interested in the relation between pædiatrics and psychiatry we warmly commend a reading or re-reading of the late Bronson Crothers' *A Pediatrician in Search of Mental Hygiene*. Though it was written over twenty years ago, most of what we have discussed appears in it, better expressed and considered with greater wisdom. We suspect that Dr. Crothers might have regarded some of our views as a little naïve, but any amusement he might have felt would have been tempered with his usual tolerance and understanding.

NORMAL PSYCHOLOGY IN THE PRECLINICAL CURRICULUM AND THE STUDENT'S REACTION TO IT

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THERE is no shortage of lip service today to the idea that doctors should understand their patients. Yet instruction on the whole and coordinated organism still scarcely features in the student's curriculum. He is crammed with technicalities about the parts of the body and their activities; but about the articulated organism—the total living entity, with its reactions to fellow organisms and the environment—he gets nothing scientific whatever. Hence it is that large aspects of human functioning (ones so elementary as primary and secondary processes, displacement, gestalt, constancy, synæsthesia, " g ", imprinting, releasers, regression) are unfamiliar to most medical persons.

Denunciations of the corpse-centred curriculum, as it has been aptly called, increasingly come from within the profession itself, and there have been many authoritative declarations that the syllabus should contain the psychology of the normal, as well as its anatomy and physiology. But remarkably little has so far been done.

The Present Investigation

In 1956, at the Otago Medical School, a trial was made with weekly lectures in normal psychology for preclinical students in the first term of their third year. This, the last term but one before the full-dress examination in anatomy, physiology, and biochemistry, was considered suitable because it coincided with the teaching of neuro-anatomy and neurophysiology.

Through the courtesy of the anatomy department, an hour at 9 A.M. on Saturdays was made available. Attendance was entirely optional, and at the end of each lecture there was a quarter of an hour for questions. This was always lively and sometimes even heated, and usually a dozen students lingered afterwards, prolonging the discussion in an informal cluster. A handful who were disconcertingly sophisticated, and also dilatory about proceeding to the dissecting-room, were eventually uncovered as non-medical interlopers or research students.

In the following term, the students were asked their views on the experiment; and of a class of 106, 99 replied to my questionnaire (a convenient number enabling the figures in this paper to be read both as quantities and as percentages). The answers were to be anonymous, but 51 signed their names—often to views expressed at length and without inhibition. The class included 14 women, of whom 12 were known to have replied.

At this stage, I should mention that the experiment was encouraging enough to be repeated annually, and the exploration of student reaction was continued likewise.

Content of the Lectures

Necessarily, the course was a limited one.

As an opening, the extensive scope of psychology was sketched, together with its main methods and small but detailed examples of laboratory experiment, statistical devices, and naturalistic observation. To depict the latter on its homeground in the clinic, a child's fear of stethoscopes and its possible sexual interpretation were thrown in (serving also somewhat as a thunderbolt).

Unconscious mental activity was then covered at some length, leading to Freud's distinction of primary and

secondary processes, to inner sexual and aggressive pressures, and thence to the topics of motivation and drive and of character traits and psychic structure. In connection with the last, various hypotheses were mentioned, including the psychoanalytic ones and the approach of factor analysis. The theme of drive served to underscore the applicability of evolution to the understanding of human behaviour no less than of human morphology.

Next, perception was discussed so as to give a foreign sidelight on the cerebral anatomy and physiology on which the class was currently engaged, and to illustrate the interplay of orectic and cognitive functions. Perception led in turn to the body image, and this opened the subject of mental development, which was exemplified in the confined setting of infancy.

Finally, to display the practical application of some of the methods touched upon, one lecture was devoted to intelligence and its measurement.

Student Appraisal of the Place of Normal Psychology

The significance that students attached to the subject could be assessed in various ways. The most obvious was their attendance, concerning which their replies on the questionnaire corresponded to my impressions (no register being kept).

Only 4 said they attended no lectures at all; another 4 said they came to one or two; 28 said they came to " some " (more than two); 63 said they attended " all, or nearly all ". In fact, the audience thinned towards the end of term; but it only fell away badly once—on the morning after the annual ball. Indeed, the attendance was a reassuring surprise. Since the lectures were notified as optional, were unrelated to any examination, and were to take place at a period when the medical student is traditionally most hag-ridden, some very dismal predictions had been made, not least by students themselves.

Three items on the questionnaire were aimed at the student's more private evaluation. The first asked him simply to choose the weight he would attach to normal psychology—for the medical student. None regarded it as " irrelevant "; 4 thought it " relevant but not really important; 73 described it as " important "; and 22 put it on the same level as anatomy and physiology. (Of the latter group, 4 added that it was more important than anatomy, to which another 2 added biochemistry.)

In view of the enormous preponderance of time given to anatomy and physiology, and the absence of any conspicuous intellectual rebellion in the medical school, it was most unexpected that 22% of students gave psychology an importance equal to these subjects. The next item, which sought their estimation less directly, proved even more startling.

Here their opinion of the place psychology ought to occupy in the three preclinical years was indicated by selecting one of four possibilities. In fact, 4 would not commit themselves on this question; but, of the 95 who did, 30 thought that it should be " expanded to include practical work and an examination ", 47 that it should be " expanded with more lectures but no examination ", and only 16 that it should be " confined to the course of one term's lectures provided recently ". The other possibility that it be " eliminated " was preferred by 2, who felt that it should come in later in the medical course.

Half those who rated psychology as highly as anatomy and physiology baulked at an examination and the mere idea generated many a conflict. Several students inserted comments:

" More lectures and practical work but NO examination ";

" an examination in psychology would land you with a new crop of neuroses, but most people (including myself) will not exert themselves really to learn anything extra in this already overloaded course unless we must pass an exam at some stage."

That 30% of a class of medical students (and also incidentally, of the classes that have followed them) should concur with still another examination being added to the syllabus is as convincing an index as any of the seriousness with which they recognise psychology. This is the more striking since, at this stage, they have none of the clinical experience which forces some vague awareness that abnormal psychology deserves notice.

Whether it was the minuscule series of lectures that persuaded the class is uncertain. Unluckily, no effort had been made to elicit their attitudes before the course, and with the 1958 class the replies to an inquiry beforehand were plainly contaminated by advance information. However, from the discussions after each lecture, and written comments such as the course being " an eye-opener to many people ", it was clear that some students who came to accord extreme importance to psychology had previously never bothered to think about it.

Reactions to Content of Lectures

On the questionnaire, there was space for the student to remark on the lectures, to indicate topics that could have been omitted or should have been included, and to state any general views he had on psychology and its teaching. Most of them did so, and though the conclusions to be drawn are not novel they deserve thought by anyone who plans to impart knowledge by lectures.

Two Inherent Shortcomings of Lectures

In the first place, it is obviously impossible to please everybody: the same item is too complex for some people, and oversimplified for others; for some too much ground is covered, for others too little; some want more details and others want less. The general comments on these lectures varied from enthusiastic gratitude to plain disapproval, one person expressing outrage at their " complete Freudian bias " and asking " under what authority is this *type* of psychology taught? ". In the brickbats there was occasionally a pleasing ambivalence:

" The introduction of ' fantastic ' theories before the student is ready for them ruined the series . . . however, on the whole interesting (if taken with a large grain of salt) but could be made something really worth while. At least they made me think!! Thanks."

The second commonplace to emerge was that even heavily underscored material in a lecture will be missed by part of the audience, while some hear and respond to themes that have not been breathed (a point easily checked because full scripts were typed out beforehand). This was particularly apparent with students who took any exception to what was presented.

One instance was the irritated critic who wrote: " You appeared to take too much for granted in suggesting that many normally accepted views, e.g., religious beliefs, were in fact abnormal, without giving any evidence at all, let alone proof of your contention." Since it was early announced that the psychology of religion would not be touched, this reproach perhaps sprang from generalised annoyance with the requisitioning of certain received ideas (from the arguments for tobacco smoking to those for corporal punishment in schools) to exemplify rationalisation of inner drives.

Whenever there was conspicuous deafness for some ideas, or agitation about others never offered, it reflected disturbance from two sources—the prospect of human

nature not being what it seems, and preconceptions about psychology.

Preconceptions about Psychology

Certain preconceptions about psychology are perennial, and in some medical students unshakeable. These are that psychology is entirely composed of fratricidal controversies; that these controversies wholly relate to the irreconcilable theories of Freud, Jung, and Adler (should the student have heard of these names); and that any statement by a psychologist is therefore inevitably partisan.

Anticipating trouble with this stereotyped presumption, I took pains to bring out concordances in psychology and to indicate not only other men of stature besides the aforesaid trio, but also the constant reliance of this science on research by an anonymous rank and file. Through brevity alone, the course was highly selective, and therefore strongly coloured by the writer's values. Thus, time was found for William James, Helmholtz, Wertheimer, McDougall, and Spearman, for example, but little was spent on Jung and next to none on Adler, whose historic differences with Freud were dismissed as of no burning consequence at present. Freud himself was depicted as one of the major intellectual influences of the century, but some objections to Freudian theory were made explicit also. None of this, however, saved me from accusations of deplorable bias and of having outlandishly displayed the psychology of " only one school " with " Jung and Adler being conspicuous by their absence ".

Such protests were extended by 14 students, and it is not at all clear from the questionnaires why, for these (and doubtless many others), a course which, in a small way, illustrated gestalt, comparative and statistical psychology, and psychoanalysis remained defective through scantiness about Jung and Adler of whom they knew no more than the names. Subsequently, in conversation, reasons have come to the surface, a salient one being a capricious attitude to psychological theories which comes from there being no examination in the subject and no discipline bringing the learner to grips with its less dramatic content. Theories with some piquant personal relevance easily capture attention, and since Freud's (no matter if wrong-headed) are in this category, Jung's and Adler's, with whom his are coupled, are assumed to be of like status. But theories that are more distant from the self—derived from the behaviour of dogs reared in the dark, or from vision with distorting spectacles—are seldom promptly sensed as significant. In fact, increasing the focus on these with the 1957 and 1958 classes, the effect has not been to lessen suspicions of favouritism for Freud, but, on the contrary, to aggravate discontent about one-sided theorising.

" Theorising " was a term of disparagement on several of the questionnaires and this brings me to the student's confusion about scientific thinking and his other main prejudice about psychology—that it is obsessed with sex!

General Difficulties with Scientific Theory

In the selection of lecture material and its treatment, I tried to present psychology as a science with the same order of complexity, diversity, discipline, and biological rectitude as other sciences familiar to the student. The lectures were therefore deliberately arranged to cover circumscribed patches of ground at an advanced level rather than wide territories at an elementary one, and to need concentration no less strenuous than other medical subjects.

Perhaps an inevitable sequel were several complaints of their being too complex and perplexing:

" Mystified more than enlightened . . . certainly not introductory in the normal sense "; " certainly aroused interest but I personally was out of my depth very quickly "; " inclined to become too high-powered ". A few added a remark that their reach was too narrow: " only presented a minute amount of the scope of psychology which a medical practitioner should know"; " most interesting but I felt could possibly have been a little more generalised ".

On the other hand, these feelings were not unanimous and there was some applause for the level chosen.

Beneath the strictures on abstruseness and " theorising " lay a more serious difficulty—a misunderstanding of what science is about. Many were alarmingly unaware of the supremacy of theory among its goals and of the dependence of its practical uses on abstract generalisations:

" The psychology course should be aimed more at improving the doctor-patient relationship than burdening the students with details. The best examples of practical psychology that I can think of are Norman Vincent Peale's *Power of Positive Thinking* and Dale Carnegie's *How to Win Friends and Influence People*. These principles would be far more valuable to a student than the detailed mechanism of the psychic apparatus."

There were other instances of such muddle and of widespread impatience with knowledge for its own sake:

" A good introduction to principles of normal psychology but not of much practical value "; " a broad outline of psychology as a means of understanding people rather than as a technical science would possibly be of more use "; " more about people than theories "; " if psychology is taught it should be rather of the general ' practical interest ' nature than the science nature and accent should be made on the fact that these patients are human and not scientific problems "; " should be much more linked with the doctor's outlook—how it will help him, when, where. Don't need to understand the complicated theory of it all."

From medical students, this avowed lack of interest in science, and the philistine juxtaposition of it with practicality, were depressing, if no great surprise. The blame largely lies, of course, on a syllabus which imposes a barren round of unsupervised rote learning and crowds out argument over ideas and scientific method. Before long, the sheer tedium of memorising disconnected, minute, and unemployable details imparts an indelible tinge of futility to *anything* abstract that demands effort—fact or theory, strict principle or malleable hypothesis.

But probably, too, there is another factor—less corrigible than the arrangement of his syllabus—that promotes the indifference to science and its procedures blatantly exhibited by many a medical student. It is the need to hold down unconscious and forbidden tendencies which are stirred into troublesome excitement by the " scientific " side of his waking hours—dissecting the cadaver, and, later, manually and visually exploring the patient's body. This restraint seems to be achieved by locking " science " as such into an enclosure, and denying it any rights in the outside world of " practical " or " ordinary " affairs. Included in the latter is any interchange on a personal level with patients, apart from narrow scrutiny of their bodily symptoms, to which alone, and isolated from their owners, science may have access. Since psychology treats of such " ordinary " matters very much more than does biochemistry, to present it frankly as a science in these lectures was instantly to invite resistance to " theorising " of the kind quoted.

A scientific approach to personality may well awaken invariable antipathies; but I have an impression that medical students are provoked into singular emotional turmoil about it. Possibly this connects with that common side-effect of a medical education which is to leave the

doctor with *less* intuitive understanding of his fellow man than is possessed by unschooled people. The occupational hazard of nascent scoptophilia is, I suggest, met by an habitual, unconscious, perceptual inhibition. By virtue of this, patients cease to be so vividly personal as to stimulate prohibited impulses. It is a tranquillity purchased, unfortunately, at the price of psychological blindness.

Particular Difficulties with Psychological Theory

Allied with these yearnings for utility as opposed to abstraction was the frequent request for more clinical psychology. This came from 21 of the class, and typically as " I would like to have heard about the simpler common neuroses ". Only 2 objected to an excess of the pathological, while another, who was altogether heavily critical, implied something of the kind: " you did not treat of normal psychology ".

Actually, recourse to psychopathology was openly barred except where it illumines the physiological workings of behaviour—the quality of sexual impulses in the raw, the features of primitive perception. The rationale for this was not readily grasped despite the analogy made repeatedly with the endocrine and other systems whose physiology is clarified by their diseases. Either the pathological fragments were mistaken for lessons in clinical procedure, or their physiological purport was denied on the naïve pretext that morbidity is not universal.

An adjoining stumbling-block was that of unconscious sexuality and its pervasiveness and heterogeneous aims. Again, the difficulties were more apparent in the discussions than on the questionnaires. Only 6 wrote that there was too much emphasis on sex, one giving vent to real heat (" go more down to earth . . . . give psychology of meeting and understanding people, as people, rather than sexual aberrants "); while there were 3, contrariwise, who asked for more coverage of sex. However, to judge from the two succeeding classes, there may well have been at least a dozen more, keeping silent, who could not swallow the fact that psychology is no more a subject for the drawingroom than anatomy. Incidentally, it is curious that, although aggressive impulses were accorded much the same prominence and treatment as sex, nobody in four years has uttered objection or distaste.

The primacy and polymorphy of sexual drives in man, both infant and adult, were brought out with the dissection of dreams, with anthropological data, and with pathological phenomena; and this was supported by the evolutionary consideration that the role of these drives must resemble that in all the higher mammals. The discussion periods (and questionnaires from subsequent classes, quoted now in this one connection) revealed many students with whom the latter argument cut no ice. Not only were there objections to Darwinism being applied to psychology at all, but there were protests at its being referred to as the centrepiece of biology:

" If a person comes to university (and doesn't inquire much) and has the Evolutionary Theory thrust down his throat, then goes to the Medical School and hears lectures that tend to give him the impression that life is controlled mainly by sex, then he sees himself only as an intelligent animal."

Bishop Wilberforce's gibe at Darwin—" Maybe your grandfather was an ape, but mine was not "—had an echo here:

" I have gained the impression that the almost sole directing force of our actions is sex. . . . This may be true of some people, but it is certainly not true of myself, and I hope equally untrue of an appreciable number of our Western community. "

Like other sciences, psychology has progressed well past the limits of knowledge available to untutored common sense, and to make the subject both intriguing and worthy of attention, I tried to convey this. Sometimes that provokes the hardiest of the inappropriate reactions that psychology has to suffer—the dismissal of a theory because to common sense it seems implausible. Students who have docilely accepted from early childhood, and without in the least knowing why, that the Earth is spherical and in rapid motion, will rise in revolt at the idea that their own minds and other people's are equally unlike what they seem. As well as with unconscious sexuality, this happens over more neutral issues; for example, a few were incensed merely to hear discredited the idea that perception can be explained as the sum of incoming stimuli, passively recorded. But, judging by their total ratings of the importance of psychology, an encouraging proportion seized the bait of penetrating beyond the reach of common sense, and some spotted its purpose. This was expressed charmingly by an astute individual who advised preliminary apologetics for any quickening of traditional conflicts between science and the Bible:

" To witness the hanging, drawing, and quartering of common sense is rather disconcerting and leaves one feeling somewhat frustrated (very bad!). Perhaps we haven't made out so well after all. Maybe we *are* crazy mixed up kids. . . ."

Summary and Conclusion

It is an ancient precept for the physician to have regard to the whole person of his patients as well as their diseased parts. Yet he remains untrained to do this—a healer who has known and forgotten the relations of the pterygopalatine fossa but has never learnt the inside causes of suicide or the patterns of mental unfolding in childhood.

A course of optional lectures in normal psychology was instituted in 1956 at the University of Otago, for medical students in the penultimate term before the professional examination in anatomy, physiology, and biochemistry. This paper describes their reactions as ascertained by discussion at the time and by questionnaires supplied one term later.

Brief as their encounter with the subject was, over 80% of these New Zealand medical students felt that teaching of it should be increased in the preclinical period.

Their reactions to the substance of psychology revealed difficulties both with this and with scientific ideas in general. Despite their rearing in laboratory and dissecting-room, many students are in confusion over the method of science and the nature of its theories. The reasons probably include both the arrangement of the syllabus (which might be improved) and unconscious conflicts provoked by everyday work in dissecting-room and clinic (for which a remedy is less apparent).

Psychology itself stirs up peculiar resistances to science in general and latent hostility to Darwinism. Whereas the application of biological evolution to human anatomy is compliantly accepted, its application to human psychology is often resented.

The unreliability of the senses, for comprehending the natural universe, which stands out in all the sciences and is assumed in the geography lessons of the school child, is not taken for granted where psychology is concerned.

The teacher of psychology also has to contend with a massive preconception that nothing is established in psychology and that the subject is entirely occupied by

feud. Anything the instructor imparts is therefore heard as partisan and open to dispute. Challenge may come from students who confess to total preceding unawareness of psychology and who would probably never think of opposing their teachers in any other field.

Psychology—the science of the behaviour of living animals—is part of biology and should enter with that. When the medical sciences proper begin in the second university year, it should expand to a major subject with a formal examination. Those who would oppose this often forget how much objection there was, eighty or ninety years ago, to giving physiology space to rival anatomy in the medical curriculum. As with other subjects, instruction should be predominantly (though not entirely) in the hands of medical psychologists, who should be encouraged to flower in medical schools with departments and laboratories of their own.

It has often been observed that this reform is long overdue. Meanwhile, the medical student is left pitifully unversed in the science of human nature—commonly, indeed, in the comprehension of what science is about.

MEDICAL EDUCATION IN SCANDINAVIA

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THERE can be no doubt as to the high quality of Scandinavian contributions to medical knowledge, but the educational methods adopted by Scandinavian medical schools are, by comparison with those employed in the United States, little known in Britain. Denmark possesses two universities (Copenhagen and Aarhus), and Norway has two also (Oslo and Bergen). In Sweden there are four university medical schools (Uppsala, Lund, Gothenburg, and Umeå), whilst medicine has been taught for many years also in Stockholm at the Carolinean Medico-Surgical Institute. I record here my impressions from visits to six of these medical schools in 1958. Lund and Gothenburg had to be omitted from my itinerary, and the school at Umeå opened after my return. Although most of my discussions were with academic pathologists and the deans of the medical faculties, I was able to exchange ideas also with senior teachers in most clinical subjects.

ENTRY TO THE UNIVERSITY

School education in Scandinavia closely resembles the German system. After a minimum of 3 years at the gymnasium a pupil at 18 or 19 takes the "examen artium", success in which is synonymous with matriculation. Humanists as well as scientists are accepted for medical training, though supplementary university courses in chemistry, physics, and mathematics, lasting 6–12 months, are required from humanists.

Compared with the last years at a British grammar school, those at a Scandinavian or German gymnasium have different emphases. In the grammar school about two-thirds of this period is devoted to specialised subjects, but in the gymnasium only about a third. This means that a pupil on the science side of the gymnasium devotes much more time to languages and history than his British fellow. Undergraduates in Scandinavia usually speak English fluently, and not uncommonly they also speak French and sometimes German, in addition to their native language. The tendency in Britain to sacrifice a broad cultural background and a capacity for independent judgment to the interests of early and intensive specialisation can only be regretted. The experience of comparing the Scandinavians' knowledge and understanding of English history with the general ignorance of Scandinavian culture in this country was humiliating.

In Denmark the numbers admitted to medical school are not restricted, and about 300 applicants enter each year. Selection is automatic at a later stage, some 30–50% of students failing to pass the preclinical examinations after two or three attempts, and then leaving the study of medicine.

In Norway and Sweden, on the other hand, only 50–25% or even as few as 20% of the applicants are admitted to medical school, since both these countries try to regulate the supply of doctors according to the needs of the population, and the progress of medicine.

Limitation of numbers, it is hoped, will maintain a more individual type of instruction in the laboratories, wards, and clinics. Selection is based solely on the marks obtained at the examen artium. In Sweden some 400 students, and in Norway about 140 are admitted each year; of these about a quarter are women. Psychological assessment of applicants has been tried in certain schools but discarded. The interview and report system, considered too time-consuming and unreliable, has not been adopted. Those with the highest examination marks are believed to be the best students, and, bearing in mind the comparable standard of marking over the whole of each country, the broad education received at the gymnasium, and the exacting standard of the school-leaving examination, this may well be true. The subsequent careers of those selected, both as undergraduates and graduates, seem to justify this belief.

THE MAIN OBJECTIVES OF MEDICAL TRAINING

It is now widely agreed, especially in Denmark and Sweden, that it is not the object of undergraduate instruction to produce men and women fully qualified to practise all branches of medicine. That is to say, medical education is no longer regarded as purely vocational.

In view of the rapidity with which new medical knowledge accumulates, undergraduate instruction cannot be complete. Hence the emphasis must lie on scientific schooling to provide a sound theoretical foundation for practical training later in the different branches of medicine. These ideals have gradually crystallised since the war, and in 1955 greatly reorganised curricula were instituted separately in Denmark and in Sweden. Both have as a further objective the reduction in the length of the medical course.

Formerly the period from entry to graduation lasted 8–9 years and sometimes longer, but for two reasons not all this time was spent in medical training. Firstly, although the State paid the students' fees little provision was made for subsistence, and thus many students had to undertake remunerative employment from time to time during their courses, particularly between the preclinical and clinical parts. Secondly, not all students passing the preclinical examinations could be accepted for clinical training because of limitation of hospital teaching facilities. These defects have to a large extent been remedied by restricting the entry of students to medical school (Norway and Sweden) or by raising the standard of the preclinical examination (Denmark), and by better financial aid for undergraduates—though this cannot be compared with the lavish provision made in Britain. In addition widespread pruning of all the courses of instruction has been attempted.

THE MEDICAL CURRICULUM

To facilitate comparison I shall adopt the customary English terms for the subdivisions of the curriculum.

Preclinical

The premedical and preclinical sections are not abruptly demarcated. Special attention is given to medical aspects of chemistry, statistics, genetics, and psychology, whilst elementary general anatomy is started immediately.

In Norway chemistry (including physical chemistry) receives chief emphasis in the 1st year, and there is instruction also in

general biology, which attempts to relate man to his environment. The inclusion of philosophy (Denmark and Norway), and Latin (Norway) as subsidiary subjects in the 1st year's study reflects the concern to maintain a broad university discipline in the study of medicine.

Anatomy, physiology, and medical chemistry are studied for $2^1/_2$ years in Denmark and Norway, and for 2 years in Sweden. Less attention is now paid to the details of descriptive macroscopic anatomy—partly as a matter of policy, and partly because the supply of subjects for dissection is meagre. In Stockholm, for instance, a class of about 100 students sometimes had only two bodies for a whole term's work. Demonstrations of preserved dissection specimens are therefore often used. Radiology (by direct and contrast methods) and surface anatomy receive much attention. Macroscopic and microscopic anatomy are correlated by running parallel courses of instruction, and structure is viewed from the functional angle. Neuroanatomy and neurophysiology are sometimes combined. More emphasis is now being placed on medical physiology and biochemistry. Enzymology and metabolism are the subjects of special courses in Norway. Function and structure cannot be divorced, however, and a judicious balance between the two is maintained. At present all Norwegian students take their preclinical course at Oslo, whereas some go to Bergen for their clinical work.

Introductory Clinical Course

An important feature of the new Swedish curriculum is the 3rd academic year (propædeutic-clinical year), which is devoted to introductory surveys of general pathology, bacteriology, medicine, surgery, and pharmacology from the more theoretical aspects. Training in clinical methods and clinical laboratory procedures is given also. During this period the aim is to make the transition to clinical work easy, emphasis being laid on the scientific aspects of clinical problems. In other words, the scientific approach initiated in the preclinical period is carried over into clinical studies. Although the introductory period is shorter and perhaps not so sharply defined in Denmark and Norway, elementary courses are an integral part of the curriculum.

Clinical Training

The 4th year of the Swedish system is devoted to further theoretical instruction in internal medicine and surgery (with their major laboratory aspects, including clinical physiology and blood-transfusion methods), and clinical techniques, and to practical work in the wards and clinics. In the 5th and 6th years pædiatrics, psychiatry (with which neurology is combined), obstetrics, gynæcology, and social medicine are studied in block courses lasting 2–4 months. Clinical instruction in the smaller specialties is confined deliberately to a brief elementary survey. The study of pathology continues throughout the clinical years, mostly in the form of conferences, and with emphasis on diagnostic laboratory procedures. Before full qualification 9 months of supervised practice in medicine, surgery, and an optional specialty is required, giving the whole medical course a length of $6^1/_2$–7 years.

In Norway, the clinical course proceeds much as in Britain, the first $2^1/_2$ years being concerned with pathology, bacteriology, pharmacology, general medicine and surgery, and the smaller specialties. The last year is occupied by obstetrics, gynæcology, pædiatrics, and forensic medicine. Social medicine is taught at three periods during the clinical course, that in the final year centring around hospital patients whose problems are discussed in collaboration with their physicians and surgeons. After the examinations in all these subjects have been passed, $1^1/_2$ years' compulsory preregistration training, comprising medicine, surgery, and public health, is required.

The Danish clinical course, which resembles the Norwegian one, lasts 4 years, and is followed by a year of supervised intern practice. Thus in both Denmark and Norway medical training lasts at least $7^1/_2$ years.

A notable feature of the syllabus throughout Scandinavia is the stress laid on pædiatrics in all its aspects, on psychosomatic medicine and psychiatry, and on social medicine. The prevailing view is that, set courses apart, no opportunity should be missed for introducing the social and mental aspects of medicine.

FORMS OF INSTRUCTION IN THE CLINICAL PERIOD

Integration of instruction in the different subjects forms the cornerstone of the new Swedish system, representing in effect the introduction of certain techniques, familiar in America and sometimes adopted in Britain, into the framework of the older Continental practice. The experiment is of particular interest to observers from Britain where medical training has had too vocational an emphasis; in Scandinavia, as in Germany, medical instruction has long been regarded fundamentally as a form of university education. The main innovation is cooperative teaching between several departments on subjects of special importance or difficulty, such as renal or hepatic disorders.

Pathologists combine with clinicians to present the pathological anatomy and physiology, clinical manifestations, and therapy with appropriate discussion of psychiatric, social, and preventive aspects. At the same time students receive clinical instruction on cases specially selected to illustrate the particular topic. As may be expected, cooperative teaching makes extra demands on the staff, and some formal instruction has had to be sacrificed, but by this method the students are enabled to see medicine as a whole, and not as a series of apparently unrelated subjects. An expectant and critical attitude is fostered by laying stress on what is not known, and by letting the students hear their mentors express divergent views. This attitude is further developed by the use of seminars in which students participate in prepared discussions under the supervision of a senior member of the staff.

Clinical clerkships with bedside teaching of the familiar type constitute an integral part of the course. Clinicopathological conferences (C.P.C.S) form an important feature of the whole period of clinical training, being included not only in the courses on medicine and surgery, but also in obstetrics, gynæcology, and pædiatrics. Clinicians select the cases whenever possible, those with multiple aspects being specially favoured.

C.P.C.S are also used in Denmark, where cooperative teaching has begun. In the introductory period the tutorial system has been adopted for medicine and surgery with about 10 students per tutor; conferences of each group take place twice a week. Norwegian instruction follows the practices usual in Britain, but C.P.C.S are not so well developed.

Instruction in pathology throughout Scandinavia includes formal lectures supplemented by demonstrations of gross and microscopic pathology. Museum specimens are little used, fresh or fixed material from recent necropsies being preferred. Attendance at postmortems is rather limited, but necropsy technique constitutes a part of the course, and in Uppsala dissection even forms a subject of examination. The paucity of pathologists in Scandinavia makes it necessary for clinicians to conduct necropsies.

In one Danish department of pathological anatomy the professor gave weekly lectures on topics selected by the students, and before each lecture exposed himself to students' questions on any pathological topic. The students were quite uninhibited, and the professor's frankness in admitting when he did not know the answer no doubt contributed to this attitude. Students were encouraged to seek the answer to their own questions, and unresolved matters were always taken up again later, even though the existing state of knowledge did not allow finality.

In the time allotted to instruction in pathology it is clearly impossible to cover all the ground, and emphasis is therefore laid on basic processes, illustrated by selected examples from systematic pathology. Students are expected to cover for themselves those subjects which are not discussed in the lecture courses. Experimental work is not performed in class, but the results of relevant experiments are presented, whilst functional and structural changes are correlated whenever possible.

Further experience in pathology is gained by a few students, who, of their own volition, act as assistants in classwork and in the necropsy room. If a student develops an interest in a particular field special instruction of an informal nature and facilities for elementary research are provided in Sweden. However, a major aim of the new Swedish course is to prevent too specialised undergraduate instruction, and cooperative teaching is designed to achieve this objective.

EXAMINATION SYSTEM

A register of satisfactory attendance at courses of instruction is not a prerequisite of admission to examination.

In Sweden the main clinical subjects are examined separately, and their order is only partially fixed. An examination in general pathology at the end of the introductory clinical year (i.e., the 3rd year) must be passed before proceeding to the 4th year of study. A further examination covering the whole of pathology is taken later, when the student requests it, usually near the end of the whole medical course. In Denmark the final examination comprises all the clinical subjects, including pathology, which must be passed at the same time. In Norway pathology, bacteriology, and pharmacology are examined after $2^1/_2$ years of the clinical course, and the main clinical subjects a year later. In all three countries anatomy, physiology, and biochemistry are examined at the same time.

The form of the examination differs considerably from that in Britain. Most clinical subjects include a written paper, with 3–6 hours for answering one to four questions, as well as clinical and oral examinations. In pathology and bacteriology, however, most schools do not set a paper, the main examination being oral, and lasting $^1/_2$–$1^1/_2$ hours.

During this time the candidate in pathology is expected to discuss one or two gross specimens; in Denmark and Norway a microscopical preparation is included also. In some schools the candidate can study the specimens on his own before being interrogated, and in Uppsala he is allowed an hour to consider his oral answers to three or four questions. In the Swedish schools I visited no specimens are used. At Stockholm the 3rd year examination in general pathology is exceptional in comprising both papers and histological preparations, although the later examination is solely oral. The examination in bacteriology does not usually include a practical part. Throughout emphasis is laid on fundamental knowledge and clinico-pathological correlations.

The examinations are conducted by the internal professor or his senior assistant, usually in the presence of one or two censors, who are not specialists in the particular subject, and whose function is to assess capacity for judgment as well as knowledge of fact. Censors do not as a rule question the candidates, but their assessment is equally as important as that of the professors. In Uppsala and Stockholm, however, the professors of pathology examine alone, and students do not object to this closed system.

It is very rare indeed for a dissatisfied Scandinavian student to exercise his right to re-examination in public with fellow students constituting most of the audience. Scandinavian professors are largely free to alter the form of examination in their subject, without reference to the faculty.

POSTGRADUATE TRAINING

Excellent facilities for postgraduate training and research are customary in Scandinavian medical schools. A newly qualified Swedish doctor usually spends a further 2 years gaining hospital experience before entering general practice.

Specialist training lasts 5–10 years, and the Swedish Medical Association strictly regulates the requirements for the specialist licence. Graduates usually move from peripheral small hospitals to the larger ones, and then to teaching hospitals. In this way the best doctors reach teaching centres, after being proved in the periphery. This system provides a stimulus to the younger doctors, since competence is generally recognised. Senior clinical posts are not often filled by candidates under 40 or 45.

In academic departments professors and senior assistants have their own laboratory suites with generous technical, secretarial, and sometimes medical assistance. There is good laboratory provision in clinical departments, and the staff have adequate time for research.

Comment

Although a full appraisal of the Danish and Swedish experiments in medical education must be deferred, a few tentative opinions may be expressed. The medical curriculum cannot be reformed in relation to present needs merely by independent adjustments of departmental instruction; the whole medical course must be the subject of one great experiment in which all combine. The Scandinavian experiments show again that general agreement on the relative contributions from each department demands broad viewpoints, clear objectives, and the sacrifice of detail for principle.

The approach to the preclinical period in several Scandinavian schools provides a more valuable background for medical training than the sixth-form continuation courses in chemistry, physics, botany, and zoology that have featured in some of our own medical schools.

Physics, chemistry, and physical chemistry are being taught in Scandinavia with their medical applications in view, which in no way precludes a sound scientific attitude. An attempt is made in the general biology course to study those aspects with more or less direct bearing on human ecology. At the same time the basic ideas of statistics and genetics are introduced as a preliminary to the study of human biology. The correlation between human anatomy and physiology may be extended both in regard to their relative contents and to their timing, but there has been no major attempt to integrate preclinical and clinical studies.

In general both Danes and Swedes regard their new systems favourably. I gained the impression that the Swedish curriculum was over-organised and still too comprehensive; a few Swedes concurred. All clinical courses seemed to need even more selection of their content, so that more time could be left for self-instruction. In other words students in Scandinavia, as in Britain, need

more opportunity to get out of their depth and even to go astray, so that they might learn the habit of inquiry, the meaning of logic, and the value of critical assessment. In pathology at least the Swedish curriculum seemed to be too passive in that lectures and demonstrations formed a large part of the course with insufficient practical participation by the students. The Danish clinical curriculum, however, was less crowded, and the students were more actively involved at all stages. In Norway, the pattern of instruction resembled more closely the usual British practice than that in Denmark or Sweden.

The extensive oral examinations probably provide a more searching test of a candidate's knowledge and judgment than the copious papers written in Britain. When papers are adopted in Scandinavia they include fewer questions and much more time is allowed for answering them, so that candidates have ample opportunity to reveal both the breadth of their medical background and their ability as essayists. To spend several hours on one question would tax severely most candidates at British universities, but the Scandinavians, with their greater humanistic emphasis at school, take such examinations as a matter of course. It was generally felt that students were examined fairly, even though specialist external examiners were not present.

In Britain today most university teachers share with our Scandinavian colleagues the same basic attitude to medical education—an attitude which the progress of medical science demands. It is nevertheless salutary to reflect that Abraham Flexner [1] was advocating these same ideals over 30 years ago. The experiences gained in Sweden and Denmark should not be overlooked when experiments in medical education are formulated in Britain.

Grants from the Morgan E. Williams bequest and the board of governors of the United Cardiff Hospitals enabled me to visit Scandinavia.

I am greatly indebted to all my Scandinavian colleagues for giving me so much of their time, attention, and hospitality; and I trust that my account is free from misrepresentation.

1. Flexner, A. Medical Education: a Comparative Study. London, 1925.

A FAMILY MEDICINE TEACHING PROGRAMME
AS EVALUATED BY ITS FORMER STUDENTS

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IN Edinburgh medical dispensaries for the sick poor have been used for the practical instruction of medical students since the first was opened in 1776. The start of the National Health Service in 1948 saw the end of the dispensaries; for patients who had depended on this form of charity for some of their medical care could now register with a general practitioner. To meet this new situation the university "acquired" a National Health Service practice by seconding a member of its full-time teaching staff to set himself up in practice as a principal, working from one of the former dispensaries.

By the end of three years this "teaching general practice" was staffed by two doctors, a nurse, and a medical social worker, and was providing complete medical care for 1500 patients. It had a records system designed for long-term studies in family health and sickness, and was offering three months' instruction to 22 volunteer students each year.[1]

In 1952 the Rockefeller Foundation gave the university £25,000, spread over five years, to extend these teaching facilities, and the university acquired a second practice. These two practices, with a patient population of some 5000, now constitute the general-practice teaching unit. By the end of 1957 the unit was receiving 65–70 students each year.[2]

Towards the end of the Rockefeller grant, a committee of the faculty of medicine of the university reviewed the work of the unit. As part of the review the reactions of the students were sought and a questionnaire was sent to all who had passed through the unit. The paper summarises the results of the inquiry.

Benefit or None?

The questionnaire asked what advantages, if any, these students had gained from their attendance at the unit; how they thought the course could be improved; whether they had also attended the practice of an independent general practitioner, and, if so, what further benefits they had gained.

Questionnaires were sent to 197 graduates, and 48 final-year students; replies were received from 108 and 41 respectively. It is regrettable that the response-rate was no higher, though not altogether surprising. The graduates were widely scattered, and a substantial proportion of the men were serving in one or other of the Armed Forces, often overseas. Only a very limited amount of time was available for the completion of the inquiry, and there was no opportunity to send reminders to those who failed to reply. 9 of the graduates returned their forms blank, claiming that they had not in fact attended the general-practice teaching unit, and this report is therefore based on the answers of 99 graduates and 41 students.

Of these 140, only 3 said that they had derived no benefit from the course, and 2 of these thought it had been interesting or enjoyable. One of them wrote:

"I feel that the work of a medical student should be confined to diagnosis and treatment of the patient, which can be better learnt in hospital than in G.P. Of course things are different in G.P., but once qualified the doctor soon discovers this and if he has a proper basic training soon learns to adapt himself to the changed conditions. All that I learnt in a term's attendance at the G.P.T.U. would have been learnt in about two days after entering G.P. work."

The replies of the 96 graduates and 41 students who thought that attendance at the unit had been useful fall mainly under two broad headings—those who felt that they had acquired specific skills, techniques, or information, and those who felt that they had gained fresh insight into their patients and a new attitude to their work:

ADVANTAGES DERIVED FROM ATTENDANCE AT G.P.T.U.

	Graduates	Students
Knowledge Acquired		
1. Experience in diagnosis	9	3
2. Recognition of common illnesses	15	9
3. Learning indications for hospitalisation	6	4
4. Practice in prescribing and/or dispensing	8	1
5. General management of illness outside hospital	33	20
6. Utilisation of ancillary help	37	23
7. Introduction to administrative and organisational aspects of general practice	20	10

1. Scott, R. *Lancet*, 1950, ii, 695.
2. Scott, R. *Amer. J. med. Educ.* 1956, **31**, 621.

Attitudes Acquired	*Graduates*	*Students*
1. Realisation of importance of domestic and social circumstances	67	33
2. Learning to see patient as a person rather than as a case	12	7
3. Insight into doctor/patient relationship	17	11
4. Appreciation of difficulties of G.P.	15	5
Other Advantages		
1. General introduction to G.P. (not further specified)	11	5
2. Miscellaneous specific advantages	21	12
Number of forms completed	99	41

New Knowledge

Unfamiliar Common Illnesses

Only 9 graduates and 3 students claimed that they had gained experience in diagnosis. But 15 graduates and 9 students believed that the unit had introduced them to many problems often met in general practice but rarely in the hospital wards. To the extent that the emphasis of the writers is on recognition, this group of replies overlaps with the previous category; but more commonly they emphasise the better-balanced view of the nature of medical practice obtained in this way. Replies such as the following are typical:

"While doing G.P.T.U. work, one saw the ordinary problems and illness and their treatments—a part of clinical work the student will sometimes forget when concentrating on more specialised 'hospital medicine'. It makes one realise that the picture of a patient in a hospital ward is a very incomplete one, and stresses the need for taking full social and family histories."

"Here we were given a good idea of the types of complaint most frequent in a general practice; we met things not seen in the wards—waxy ears, lousy heads, many pimples, and the old spinster who comes in for a chat. In the Livingstone Dispensary I met some of the alcoholics who can be such a problem to the practitioner. We saw the results of too much alcohol and too little food."

Several people pointed out not all these new problems were trivial, and at least one remarked on the limitations of hospital experience:

"Since entering general practice I have found little difficulty in recognising and dealing with major illness, which is to say that lectures and ward clinics have been successful. There is, however, a vast realm of disease, not just minor disease, which is not adequately covered. The management of the chronic disability condition which is admitted to hospital only for investigation—e.g., severe Ménière's disease, post-cerebro-vascular accidents. The orientation of the whole course is unbalanced for general practice; it seems the most important conditions in general practice are pædiatric, dermatological, E.N.T., orthopædic, and psychiatric."

A related advantage mentioned by 6 graduates and 4 students was the opportunity to learn when to send a patient to hospital. Besides learning to distinguish the serious from the trivial, some students had grasped the importance of assessing, in marginal cases, social and domestic factors.

Prescribing

8 graduates but only 1 student felt that they had had useful experience in prescribing and/or in dispensing. The realistic setting in which the prescribing was done had advantages:

". . . the knowledge that your medicine was going to be taken! (cf. one's efforts in the pharmacology class where the product disappeared down the sink)."

Management of Illness Outside Hospital

33 graduates and 20 students had gained valuable experience in the general management of illness outside hospital, and 37 and 20 respectively had learnt to utilise ancillary help. The contrast between the patient at home and the patient in hospital was a revelation to many students:

"This was the first opportunity I had of seeing the patient in his own home, in his natural environment. How different he was from the apprehensive, ill-at-ease patient he would be in hospital. After my term in the G.P.T.U. I found I had a better perspective of the patients allotted to me in the Royal Infirmary."

"Medicine as practised on the youngest child in a family of six people living in one filthy room is necessarily extremely different from that which the student most frequently sees during his training in the cleanliness, convenience and discipline of the hospital ward. I learned also that it is possible to have the highest standards of general practice under the worst possible environmental conditions."

So too was the extent of the general practitioner's responsibility; and the variety of problems he meets:

"I learned how the garrulous neurotic, the doomed patient, and the chronically ill are handled. I learned that patients can be overexamined in their earlier visits and of the value of a placebo in simply keeping in touch with someone under stress."

Others commented on the variety of factors to be taken into account in the management of domiciliary cases:

"By seeing the patient in the doctor's surgery or in the patient's own home and by watching my tutor dealing with the problem, I realised how one's management was decided by weighing up many factors such as the state of the home, a mother's ability to look after her sick child, the wages coming in, the influence of Grannie, and so on."

Administration of General Practice

20 graduates and 10 students had found the course a useful introduction to such things as record-keeping, filing, letter-writing, and the use of the N.H.S. forms. Some students also mentioned the design and layout of the surgery. One enthusiastic graduate suggested that an extended course at the unit could take the place of the traineeship scheme:

"Having attended the G.P.T.U. and having been a trainee G.P. as well, I should like to say that I found the G.P.T.U. of much greater value from the point of view of literally training for G.P. work—e.g., use of N.H.S. forms, how often to visit, letter-writing to hospitals, dispensing, records, &c. . . . I feel that the G.P.T.U. gives a surprisingly wide picture of general practice, especially in relation to other organisations, and that if a period of 3 to 6 months could be spent whole, or nearly whole-time, in such a unit prior to entering ordinary general practice the trainee G.P.s scheme might well be abolished."

New Attitudes

67 graduates and 33 students had found their understanding of the importance of social and domestic circumstances in illness increased. The role of socioeconomic factors in the ætiology of disease was brought home with particular clarity because the unit serves a very poor area. At least as common as references to ætiology, however, are comments on the impact of illness on family life:

"The social implications of disease were more apparent after this course, for one saw something of the effect of disease in one member on the others of a family, and of the problems —e.g., child care—raised when parents became ill. The practical working out of the theory imparted in Public Health lectures was seen against the background of definite cases; and the 'round table' case conferences, I felt, were one of the most valuable features of the course."

About 15% of those who replied credit the unit with training them to think of the patient as a whole person. Though this conception is stressed throughout the student's career, apparently it needs practical experience to bring home its full significance. One graduate wrote:

"The great lesson I learnt from the G.P.T.U. was in seeing the 'patient' as he really is—not a 'case' as he so often tends

to be in hospital practice, almost as depersonalised as a specimen in a pathology museum—but a person inextricably bound up with his environment—social, family and business. This sounds trite. One was always urged to take this view right from the start of one's clinical training. But there is a difference between knowing about something and appreciating its significance."

Another graduate writes of having realised at the unit:

"that individual patients require different treatment of the same complaint (e.g., mental stress in the coalminer with seven children and no other source of livelihood, and in the anæmic, undernourished para six+two woman of 26 who lives up four flights of stairs in a tenement) . . . that half of the problems of medical practitioners spring from economic and social causes and not from medical sources (poverty, ignorance, dirt and lack of application of even the most elementary principles of hygiene)."

The General Practitioner's Problems

15 graduates and 5 students said that they left the unit with a clearer appreciation of the difficulties and problems of the general practitioner—the large numbers of patients with whom he has to deal, the limited amount of time for examination, and the limited amount of technical help. The conception of understanding and treating the patient as a whole necessarily lays particular emphasis on the doctor-patient relationship. Between one in four and one in five of the G.P.T.U.'s former students believe that they gained a useful insight into the nature and implications of this relationship. For example:

"The G.P.T.U. experience impressed in me how important the doctor-patient relationship is in treating the patient wholly—full understanding can only come as a result of trust which, in turn, is usually the result of the general practitioner's having spent the necessary time in hearing the whole problem from the patient."

Another graduate refers to the function of the G.P.T.U. in setting a standard in this respect:

"The success of the work of the G.P.T.U. depends in part, I feel, upon the keenness and interest of the doctor in charge, but most of all upon his love of his patients. During my term I saw something of what I came to regard as the best in the doctor-patient relationship."

Suggested Improvements

There were few former students of the unit who did not think that the course could be improved.

Length of the Course

45 graduates and 11 students favoured a longer course, either on the present part-time or on a full-time basis, and several thought that a more concentrated course would be useful. One suggested that the student should attend for, say, a fortnight, so that he could learn something about the timing of treatment—"when to allow the patient up, when to allow him out, and when to allow him back to work".

Home Visiting

As to the content of the course, the demand for more home visiting was about three times as great as for more surgery attendances. It was often suggested that students should have greater responsibility in the care of patients, though the practical and legal difficulties were sometimes appreciated. The activity of home visiting was often contrasted with the "passivity" of sitting in at surgeries. It was also occasionally pointed out that by home visiting the student learned more about the more seriously ill patient; this experience might perhaps help the student to bridge the gap between what he saw in the hospital wards and what he saw in the general practitioner's surgery. Presenting cases at a clinical conference seemed to be favoured more than a formal "writing up".

Formal Instruction

Those who suggested that more instruction should be provided always had some definite subject in mind. Thus 3 graduates thought that more should be taught about the recognition of common illnesses, and 5 suggested further instruction in the organisation of records, letter-writing, history-taking, and so on. It was suggested that "the interest of the departments of psychiatry and public health and social medicine might be invoked with regard to psychiatric and social history taking". 2 students and 2 graduates were in favour of instruction in specific procedures, such as vaccination, and 5 students (but no graduates) regretted that they had had no experience of domiciliary midwifery. One complained that:

"As a result of having conducted my 12 cases of normal labour in a maternity hospital, I have not the vaguest idea of how a home delivery—and especially one in a slum area without water and other facilities—should be conducted, in particular with regard to sterile and antiseptic routines."

Those who suggested reducing the time spent in instruction always wanted fewer formal lectures, sometimes because some problems were better understood by observation and participation:

"The almoner's sessions were interesting, but otherwise the formal teaching sessions were probably unnecessary and more could have been learnt by actual participation. Too much time is spent on words and too little on action."

"Form filling is a very necessary integral part of the N.H.S. now and usually very complicated and somewhat difficult to understand. These were all explained at a formal teaching session, but they could probably have been better understood if we had actually been given the opportunity of dealing with the appropriate forms whenever the necessity arose with the actual patients."

Some subjects were held to be adequately covered in other courses:

"Some of the time devoted to talks on the various functions of social workers—e.g., almoners, nurses, &c.—might be curtailed and more time given to visiting with and without the general practitioners. The duties and opportunities of these ancillary organisations and personnel are largely covered in the public health and social medicine course."

Experience in an Outside General Practice

Former students of the unit who had also spent some time with an independent general practitioner were asked to compare the value of these two forms of experience. Unfortunately, only 14 graduates and 8 students had had this additional experience.

Only 2 (both graduates) maintained that they had derived no additional benefit from attending the practice of an independent practitioner. 10 of the remaining 12 graduates, and 7 of the 8 students, thought that the chief advantage lay in seeing a more representative type of practice, where the doctor had a longer list and less ancillary help. 2 or 3 people also commented on the different social, economic, and intellectual level of the patients seen in the independent practice. 3 graduates and 4 students had welcomed the opportunity to do more home visiting and attend emergency calls. But the group was virtually unanimous that the independent practitioner was not an adequate substitute for the general-practice teaching unit.

The question In what order do you think the periods with the general-practice teaching unit and with the outside G.P. should be arranged? was answered by all those

who had experienced both, and some who had not. Of the 57 graduates, 37 were in favour of attending the G.P.T.U. course first; the remainder was evenly divided between those who preferred the reverse order, and those who thought the order immaterial. Of the 21 students all but 1 thought the G.P.T.U. course should be taken first. 3 students who had attended the practice of an independent practitioner both before and after the G.P.T.U. course all agreed that the course should be taken first.

Place in the Curriculum

Some suggested that more students should attend the unit; some that attendance should be compulsory; others that students should come in smaller groups. Several suggested that the course should be farther away from final examinations, in either the previous academic year or the previous summer vacation.

Others commented on the limited time given to general practice, compared with other subjects in the medical curriculum. One student complained:

"The present curriculum allows only a *few* meetings referring to general practice for a few students whilst it is still insisted that one should be able to distinguish mono and dicotyledons and describe the life-cycle of the thallophytes (and devote a whole term to learning to do so)."

Another student wrote:

"The course in clinical chemistry is but a rehash of the practical biochemistry course with specific reference to side-room tests and emphasis on tests that no resident or G.P. would ever carry out. All this could and should be taught in the biochemistry course which tends more and more towards the esoteric. More time could be found in the pre-clinical term, which should be regarded as a full-scale course and a later term used for the G.P.T.U."

Two Criticisms

Most criticisms of the unit fell under two headings—that the low social level of the unit's patients give a distorted picture of general practice, and that more ancillary help was available to the doctors of the unit than the average general practitioner could hope to achieve.

"The student is apt to get the impression that he is dealing exclusively with ill-fed, badly housed, in many cases dirty and ignorant people, with low ethical and moral standards, and his attitude is thus hardened towards his patients at this embryo stage. Not all the patients are like this, of course, but many of them are, and the home visits that the student himself performs, while of much value as education in seeing how the other half of the world lives, or rather exists, do not inspire him with affection and confidence in the patients he is treating."

Some writers suggested, however, that it is no bad thing for the budding general practitioner to have the high standards of a model practice set before him:

"One did perhaps tend to get an idealised view of general practice—not so far as home conditions were concerned but in respect of the facilities available . . . This, in itself is no bad thing since it gives one an ideal for which to strive, but it is difficult, if not impossible, for the single-handed man to keep records and provide such facilities."

Postscript

As a result of the review of the work of the unit, the university decided to accept full financial responsibility for the unit at the end of the Rockefeller grant, and to extend its work. All students are now required to be attached to the unit for one academic term. Eight local general practitioners have been appointed part-time members of the staff. During each term, half the students will work in one of the two university practices, the other half in the practice of one of our part-time colleagues. The students and our part-time colleagues will attend weekly seminars, when the clinical experience of each student will be reviewed. This arrangement will meet the students' wish to see more of general practice as it really is rather than under the somewhat special circumstances of the unit.

We should like to acknowledge the help of the members of the Edinburgh University Medical Faculty Steering Committee which, at the time of the survey, was administratively responsible for the unit: Sir Stanley Davidson (chairman), Prof. D. M. Dunlop, Prof. R. J. Kellar, Prof. Alexander Kennedy, and Dr. F. J. Wright.

SELECTION PROCEDURE AND EXAMINATION PERFORMANCE

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THE selection of students for the preclinical course at University College London (U.C.L.) in 1950–52 has now been reviewed in the light of the candidates' subsequent academic history. A study has also been made of the performance in medical examinations of students admitted in 1947–54.*

The 1950–52 Selection Procedure

An account of the procedure used for most of the intake of 1950–52 has already been given (Aitken and Johnson 1952, Johnson 1952). Candidates were selected for interview on the basis of their written application and referee's report. They were then given three interviews: (1) to assess intellectual ability; (2) to assess suitability for medical studies at U.C.L. and University College Hospital (U.C.H.); and (3) a group interview. Those interviewed were either rejected, or offered a place, or offered a reserve place.

Admission to Other Medical Schools

Thanks to the cooperation of the deans of other medical schools, we have been able to follow up most of the candidates who were interviewed at U.C.L. and admitted to other schools. Some had been offered a place at U.C.L., while some had not.

Of the 584 candidates interviewed 296 (51%) were offered a place or reserve place, and 288 (49%) rejected. 176 (30%) were admitted to U.C.L., 225 (39%) entered other medical schools, and 183 (31%) are not known to have started medical studies.

There is some measure of agreement between selectors at U.C.L. and at other medical schools; for, of the 120 who were offered a place or reserve place at U.C.L. but did not take it, 65% entered another school, compared with only 51% of the 288 whom U.C.L. rejected. (The difference is statistically significant by χ^2 test [$\chi^2=5{\cdot}568$, $df=1$, $P=0{\cdot}02$].) Probably these figures underestimate the extent of agreement; for the candidates who were offered a place at U.C.L. are less likely to have applied to other schools than those who were offered a reserve place or none.

We have no data about our candidates who applied unsuccessfully to other medical schools: in 1955 each applicant to medical schools other than Oxford and Cambridge made an average of 2·8 applications (Kelsall 1957). We also do not

* A detailed report may be obtained by writing to the Clerk of the Faculty of Medical Sciences, University College, Gower Street, London, W.C.1.

know how many of those not admitted to other medical schools had been offered places which they did not take up. About a quarter of those offered a place at U.C.L. did not take it up, and an eighth were not admitted to other medical schools. A common reason for withdrawal was failure to get exemption from the 1st M.B. at the appropriate time, which resulted in the candidate being called up for National Service.

Among the candidates who went to other medical schools the decision of the U.C.L. selectors as to acceptability was not closely related to the subsequent examination performance. Of the 26 U.C.L. interviewees mentioned in the deans' returns as having had some academic distinction 20 had been rejected, 1 accepted, and 5 offered reserve places.

Considering as " satisfactory " the students who passed 3rd M.B. within five years of starting the 2nd M.B. course, or took B.SC. in addition—by contrast with those who took longer than five years, passed Conjoint only, or withdrew —there was a slightly higher proportion (80% of 39) of " satisfactory " students among those who had been offered a place or reserve place at U.C.L. than among those rejected (72% of 103), but the difference is not significant by χ^2 test. (These figures refer to candidates who started 2nd M.B. courses in 1950–52; they do not include students at Oxford and Cambridge, where the course is longer than at other universities).

Performance in 3rd M.B.

The 3rd M.B. performance of students admitted to U.C.L. was examined in relation to their performance at selection. The students had been graded on a five-point scale on each of the following criteria: " academic record " and " general record " (assessed from their application form); " potentiality as a general practitioner " and " potentiality as a research-worker " (assessed by their referee); " intellectual ability " (assessed in one interview); " suitability for medical studies at U.C.L. and U.C.H." (assessed in another interview); and " performance in group interview ".

For all of these criteria, there is a slightly higher proportion of " satisfactory " students among those graded high than those graded low, but the only associations that are significant as tested by χ^2 are those with " academic record " and " general record ". For " academic record " the proportion of students graded A who were satisfactory was 87% (of 52); B, 81% (of 67); C, 68% (of 40); and D and E, 60% (of 58).

The relation of the interview grades to the examination records of all students known to have been admitted to medical schools (including U.C.L.) has also been studied. Here again there is a slightly higher proportion of " satisfactory " students among those graded high, but the association tested by χ^2 is not significant.

For the " intellectual ability " interview the proportion of satisfactory students was 77% of 49 graded A, 78% of 100 graded B, 74% of 85 graded C, and 63% of 54 graded D or E. For " suitability for medicine " it was 77% of 161 graded A or B, 75% of 89 graded C, and 61% of 38 graded D or E. On the group interview it was 79% of 38 graded A, 77% of 105 graded B, 73% of 94 graded C, and 68% of 50 graded D and E.

These results show that of the selection criteria studied the most useful for indicating future academic success is past academic record. They are in agreement with much research demonstrating the low predictive value of the interview for selection (Kelly 1957) and the higher value of previous examination results (Dale 1954, Gottheil and Michael 1957).

1947-54 Examination Performance

Detailed studies of students' performance in examinations, such as that of Lewis-Faning (1950) for the Welsh National School of Medicine 1933–48, and Mountford (1957) as vice-chancellor of Liverpool University, seem to be rare. Consequently, as indicated by the committee on the future intake of medical students (Ministry of Health 1957), it is difficult to ascertain the length of time actually taken to qualify in medicine (as distinct from the minimum time required for the course) and the wastage-rates (as distinct from failure-rates of any particular examination).

This report is concerned mainly with the progress of students admitted to U.C.L. for the preclinical (2nd M.B.) course. Only a small proportion were admitted to courses leading to exemption from the 1st M.B.

1st M.B.

Of the 157 medical students who were admitted to premedical studies leading to 1st M.B. exemption at U.C.L. in 1947–55, 16% failed to continue medical studies. A further 6% failed to complete 1st M.B. exemption at the end of the session but completed it externally and were admitted to 2nd M.B. one or more years later. This high wastage-rate is similar to that of other premedical courses (Ministry of Health 1957, Johnson 1949) and of intermediate courses generally (Malleson 1958).

2nd M.B.

Of the 520 students admitted to 2nd M.B. in 1947–54, half passed the examination (anatomy, physiology, pharmacology) in the minimum time, one and a half years, and another quarter in one and three-quarter years. Three-quarters of the students passed anatomy and physiology, and went on to clinical work, in the minimum time (one and a half years). 60% passed pharmacology at their first attempt, 22% at the second, and 12% at the third or later attempt.

3rd M.B.

Of the 384 students admitted to 2nd M.B. in 1947–52, 6% failed to qualify in medicine. Of the 24 who failed to qualify, 17 withdrew before and 7 after starting the clinical course. 20 of the 24 had had academic difficulties.

The majority of students who entered U.C.L. for preclinical studies proceeded to U.C.H., but 19 (5%) went to other medical schools.

Of the 384 students admitted to the 2nd M.B. in 1947–52, 41% completed the 3rd M.B. in the minimum time (four and a half years), and a further 22% in five years; 19% took five and a half years or longer; 11% took B.SC. in anatomy or physiology before doing clinical work; 2% took the Conjoint qualification only; and 6% withdrew without qualifying.

Students who had difficulty in passing the 2nd M.B. took longer over the clinical course than the others. This is shown by comparing the time taken to pass the 3rd M.B., after starting the clinical course, (*a*) of those who passed pharmacology and those who failed it (both groups having gone on to the clinical course one and a half years after starting the 2nd M.B. course); and (*b*) of those who started the clinical course after one and a half years and those who started after one and three-quarters.

Among the students starting the 2nd M.B. course in 1947–52 were 74 women (19%). There were no statistically significant differences between the performances of men and women. 4 (5·4%) of the women and 20 6·5%) of the men withdrew. (An estimate of withdrawals for Great Britain was 8·45% women and 4·78% men [Ministry of Health 1957].)

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WHAT THEY DID AFTERWARDS

A SURVEY OF MANCHESTER MEDICAL GRADUATES

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MOST of us are interested in what happened to the people we knew as students, and in learning how our assessment of them compares with their progress later. This paper describes an attempt to investigate this on a larger scale—to see (1) what proportion of graduates entered the different branches of medicine and achieved eminence, and (2) what relation their record as students bears to their postgraduate career.

From the university calendars of 1920–45 inclusive I noted the names of graduates in medicine, and any distinctions, honours, or prizes they were awarded. I then looked up their names in the 1958 *Medical Directory* and noted their posts, postgraduate degrees and diplomas, and addresses. Women graduates, of course, often marry and change their names, and this made the tracing of them difficult. I therefore decided to exclude all women graduates, and the following remarks apply only to males.

Altogether there were 889, and the names of 112 (13%) are not to be found in the 1958 *Directory*. Presumably most of them have died. Of those qualifying in 1920–30, 20% are missing; in 1930–40, 9%; and in 1940–45, 5%. I was therefore able to trace the whereabouts of 777 graduates.

It is often assumed that the great majority of students enter general practice. In actual fact only 301 (39%) did so. If the British Isles be divided into north and south by a line drawn across at the level of Birmingham, 73% became general practitioners in the north and 27% in the south. Apparently only 1 has become a general practitioner in Scotland.

104 (13%) are consultants in various branches of internal medicine. Only 27 (3·5%) in general medicine —i.e., roughly 1 per year. In addition there are 7 neurologists, 2 hæmatologists, 2 cardiologists, 18 chest physicians, 6 dermatologists, 24 psychiatrists, 11 pædiatricians, 4 venereologists, 1 geriatrician, and 2 rheumatologists.

108 (14%) have become consultants in surgery. There are 35 (4·5%) general surgeons, 2 urologists, 3 chest surgeons, 5 neurosurgeons, 2 plastic surgeons, 18 E.N.T. surgeons, 20 orthopædic surgeons, and 23 ophthalmologists.

There are 29 (4%) consultant pathologists, 22 (3%) obstetricians, 19 anæsthetists, and 13 radiologists.

There are 10 anatomists and 1 physiologist.

9 have chosen a career in the Services. 69 (9%) have entered public health, and 55 (7%) have settled overseas —10 in Australasia, 8 in U.S.A., 8 in Canada, 6 in South Africa, and 6 in Southern Rhodesia. There is 1 medical missionary and 3 work at leprosy colonies.

Among these graduates are 2 professors of medicine, 3 of surgery, 1 of pathology, 1 of bacteriology, 4 of anatomy, and 1 of physiology. Civil and military awards comprise: C.B. 1; C.M.G. 1; C.B.E. 1; O.B.E. 8; M.B.E. 5; D.S.O. 2; M.C. 3; G.M. 1.

Student Success and Later Career

24% of these graduates gained a distinction or prize in at least one subject. In the years under consideration both first-class and second-class honours were awarded. Of the 10 (1%) with first-class honours, the name of 1 does not appear in the *Directory*; but of the remaining 9, 4 have become distinguished physicians, 2 are professors of medicine, and the other 3 are consultant surgeons. 7 of the 9 hold appointments in teaching hospitals. Of the 46 (6%) awarded second-class honours, 41 could be traced. Of these, 8 have gone into general practice (only 4 since 1925, and 2 of these hold the M.R.C.P. diploma); 1 has become medical adviser to an oil company; 1 is senior administrator to a regional hospital board; and the remaining 31 have specialised and (apart from 2 senior registrars) reached consultant status. Two-thirds of these consultants hold appointments in the Manchester region.

The careers of students who gained distinctions in various subjects were noted. As each subject was considered separately, these figures may be slightly misleading; for a student often gained a distinction in more than one subject. Consultant status or its equivalent has been reached by the following proportion of the students who gained distinction in the subject shown:

Pathology	97%	Medicine	87%	Physiology	78%
Anatomy	91%	Pharmacology	86%	Forensic medicine	61%
Surgery	88%	Obstetrics	83%	Hygiene	43%

Several prizes are awarded during the medical course, and the prizewinners were followed up.

Preclinical Prizes

Dauntesey medical junior scholarship.—Awarded on the results of 1st M.B. in botany and zoology. Of the 34 prizewinners, 5 have become general practitioners, 4 have gone into public health, and 24 have reached consultant status or its equivalent.

Dauntesey medical senior scholarship.—Awarded on the results of 2nd M.B. 19 who gained the prize could be traced. Only 1 became a general practitioner and 1 entered public health. The others became consultants.

Tom Jones prize in anatomy.—Awarded on the results of class examinations in anatomy. Of the 12 prizewinners 1 has gone into public health and 1 into general practice. All the rest have become consultants—6 in surgery, 2 in medicine.

Sidney Renshaw prize in physiology.—Awarded on the results of 2nd M.B. physiology, and a paper of higher standard. 21 prizewinners. 1 in public health, 1 in general practice, and the rest consultants—9 in medicine and 3 in surgery.

Prizes Awarded on the Results of Finals

Turner medical prize.—Awarded on the results of the final examination in medicine. 21 prizewinners. 1 became a Treasury medical officer and 1 a senior administrative officer of a regional hospital board. All the rest have reached consultant status or its equivalent.

Dunville surgical prize.—Awarded on the results of the final examination in surgery. 21 prizewinners. 1 has entered general practice. 19 have become consultants.

John Henry Agnew prize in pædiatrics.—Awarded on the results of the final examination in pædiatrics and on an essay. 16 prizewinners. 1 in public health; the rest consultants.

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Stephen Lewis prize in medical subjects.—Awarded on the aggregate results of the final examination. Of the 9 awarded this prize all are consultants.

The number of general practitioners, on the one hand, is roughly equal to the number of consultants, professors, lecturers, and research-workers on the other (about 300 in each group). Of the practitioners, 14% had a distinction or prize in some part of their course, while of the second group 58% had such a distinction.

Student Careers of Distinguished Graduates

There is one fellow of the Royal Society in this group; and as a student he gained a distinction in forensic medicine. The highest scientific degree a university can bestow is the doctorate of science, and of the 12 graduates awarded this degree 5 had gained no prize or distinction as a student. Of the 4 who hold the PH.D. degree, 1 had no such prize or distinction.

145 (19%) graduates have been awarded the M.D. 21 of these were awarded M.D. with gold medal, and 9 of these had no prizes or distinctions in their student days. 53% of the 64 fellows of the Royal College of Surgeons, 42% of the 79 fellows or members of the Royal College of Physicians, and 83% of the 23 fellows or members of the Royal College of Obstetricians and Gynæcologists had no distinction or prizes as students. Of a list of 20 names of professors, directors of university departments, or distinguished research-workers, 5 had no distinction or prizes as students.

Comments

Such findings have an important relation to the selection of suitable men for certain posts. Obviously, different types of people are suitable for different jobs; but I was not able to determine that students with certain qualifications later took up any particular line.

In a symposium on Medical Research [1] held in 1954 with Sir Harold Himsworth as chairman, it was pointed out that the selection of graduates for research posts largely depends on the quality of their academic careers and the assessment by their teachers. Their initial appointment must be regarded only as an opportunity, and it has to be made before direct evidence of research ability is forthcoming. A sufficient number should be chosen to allow for the inevitable wastage. Only by observation over a time (at least three years was suggested) can a person's category of competence be determined. Few are born research-workers; the majority need an incentive to develop their potentialities.

Graduates from these years have been affected by two major events—the war and the introduction of the National Health Service. Of those who qualified in 1940–45, a considerably larger proportion have established themselves in consultant practice, compared with those who qualified in the earlier years.

There seems no doubt that academic distinction as a student predisposes to subsequent success; but whether such graduates are chosen for posts because of their past record or because they continue to distinguish themselves is a difficult question. Success in examinations indicates a capacity for hard work or a higher-than-average intelligence—qualities which usually persist throughout life. Reading the obituaries of eminent men one often notes that they had brilliant undergraduate careers. A successful student career helps a graduate to obtain a resident appointment in his teaching hospital, and this is an important step in his progress.

Success in a career of course depends on many things—especially on being in the right place at the right time and with the necessary qualifications. But, finally, apart from academic distinction, a candidate must often be selected on a personal assessment of qualities which cannot be measured in any objective way.

1. The Support of Medical Research (edited by H. Himsworth and J. F. Delafresnaye). Oxford, 1956.

TRACING PATIENTS

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IN a recent investigation on hydrocephalus [1] it took just over a year and a half to trace 179 out of 182 patients. Most were known only by their hospital notes, some of which were made as long as twenty years ago. The task of finding these patients was made harder by the disruption of the war years and much time was spent in chasing " red herrings ". I have written this paper to save others from similar frustrations, and to indicate some useful and unsuspected sources of help.

The problem is best approached by examining the hospital notes, and sending a letter with a stamped and addressed envelope to the last known address of the patient. This may be answered at once, or further letters may be needed before there is a reply. It is advisable to ask the patient for his general practitioner's address so that detailed information may be sought if required.

If there is any likelihood of the patient's having died, an inquiry which may cause needless distress to the relatives should be avoided, and the general practitioner should be traced first. Other hospitals possibly involved, or the local health authorities, may be able to help before the bereaved family is approached.

The General Practitioner

The patient's original general practitioner is usually named on the hospital case-sheets. If the patient is still alive, this doctor may be able to give the required information, or he may know the address of a patient who has changed to another doctor or left the district. Some practitioners will inquire into the whereabouts and fate of a patient from any relatives or friends known to him. If the patient has died, the doctor may be able to refer to personal files which some practitioners keep apart from the official notes. These notes are called in by the local National Health Service executive council on the death of a patient, and are retained either by the executive council or by the Ministry of Health for at least three years.

There are 138 local N.H.S. executive councils in England and Wales, and another 25 in Scotland. Their addresses are listed in the *Hospitals Yearbook*.[2] Records are kept of all patients on the lists of practitioners in their respective areas, and the clerk of the council, at his discretion, may forward a letter to the new practitioner or to the patient if he has moved and registered with another doctor in the same area or outside the district. The executive council will be unable to help if the patient moved outside the district more than two years previously, since the form E.C.22, on which the change is recorded, is normally destroyed after that period.

Hospitals

If the patient was referred by another hospital, inquiries there may prove helpful, as the original hospital may have

1. Laurence, K. M. *Lancet*, 1958, ii, 1152.
2. From the Institute of Hospital Administrators, 75, Portland Place, London, W.1.

kept in touch with the patient, or may know that he has since been seen at other hospitals. Most people are familiar with the sort of help given by hospital records and the almoner's departments (which often keep separate and very useful notes) and this will not be further elaborated.

Hospital authorities, except mental and mental-deficiency hospitals, have permission to destroy medical records six years after the date of the patient's discharge or three years after the date of death. Although encouraged to keep records longer than the minimum period (HM[56]103), some hospital authorities, for reasons of space and expense, are unable to do so. They must, however, under the Public Record Acts, keep registers of admissions and discharges, and of births and deaths, indefinitely.

The Local Health Authority

The local health authorities may be very helpful in follow-up investigations on patients under 20 years of age, or in cases with special disabilities; for they often keep extensive health and social records.

Theoretically all children are visited by health visitors soon after birth and periodically until they reach the age of 5. Many infants and children under 5 attend welfare clinics. The health visitors' and clinic medical records follow the child to school. This information is recorded on the main school medical record card (10M), at the first medical inspection at the age of 5. Further statutory medical inspections are made at 11 and 15, or school-leaving age. (This does not apply to some independent schools.) A performance record is also kept at school. These health and performance records follow the child with every move, and they are normally destroyed about three years after he leaves school.

Records are kept longer (about five years) if the family has emigrated, or if the child has been to a special school. Those of children who have been statutorily " ascertained in need of special educational treatment " (blind, deaf, physically handicapped, or educationally subnormal) are kept even longer—perhaps indefinitely—because these children may come under the supervision of the local authority on leaving school, or may be registered with the welfare department of the local authority as handicapped or blind persons. If a child dies, the records are generally destroyed after about two years, but the family record (which is sometimes a fascinating document of the utmost sociological interest) is kept by the health visitor until all the children of that family are over 20. A patient who moves may be traced from area to area, since most health authorities keep an index of case-records transferred to other districts.

All these records are generally available for research, and an inquiry, giving the name, approximate age, and last known address, sent to the medical officer of health of the area concerned (vide *Hospitals Yearbook*) will generally be answered speedily. Should a patient transfer to another area, a health visitor, if she cannot remember the new address, may make inquiries in the neighbourhood to discover where the family has gone.

The welfare department of the local health authority is responsible for the institutional care of the aged, some physically handicapped people, and even some mental defectives. It is responsible also for the welfare of physically handicapped persons in their own homes, and it keeps in touch with a large number of such people. A register is kept of blind persons.

The Registrar General

Should the inquiries so far suggested fail, then the Ministry of Pensions and National Insurance, the National Health Service central register, and the Service Departments may be consulted. For this purpose one must know at least the full name and exact date of birth of the patient. These are often incompletely noted on hospital case-sheets, and may need verification at the Registrar General's Office in London (see appendix A). Scottish documents are kept at New Register House, Edinburgh (see appendix B). A request may be made by post, for which an extra fee is charged, or a search—e.g., in the birth indexes—may be conducted personally. Copies of birth, death, and marriage certificates, which contain helpful and accurate information, may be had for a reasonable fee.

Birth Certificate

When the approximate year of birth is known, it is usually simple to trace the registration at Somerset House. On the certificate will be recorded the place and date of birth, the correct name of the child, the full name and maiden name (but not the age) of the mother, and in most cases the full name and occupation of the father. Other information of value may be the " home " address, which is shown separately if the birth took place away from home, the address of the " informant ", who is generally one of the parents, and sometimes the father's number and unit if he is in the services.

Marriage Certificate

This document is more difficult to trace than a birth certificate, because the date of marriage is seldom recorded in hospital notes. To find it one may have to search through ten to fifteen years' entries—an expensive undertaking. But this may be the only means of tracing a married woman from her maiden name.

Besides giving the full name of the woman, this certificate states her age, occupation, and address at the time of marriage; the names and occupations (not the age or address) of the fathers of the married couple, are also entered.

The Scottish marriage certificate offers additional information—names and addresses of witnesses are noted, and the names and maiden surnames of the participants' mothers are given.

Death Certificate

This certificate, which may be the only readily accessible evidence of a patient's death, is not difficult to trace, even when the date of death is only approximately known, if one knows the patient's age, which is shown in the death indexes. Information entered on the death certificate includes the cause and date of death, the place of death, and home address (if different), and the name and address of the informant, who is generally a close relative. The certifier, either doctor or coroner, is named, and whether a postmortem examination was made.

Thus, several names and addresses are discovered of persons and authorities who may be approached for further information. (Scottish documents are kept at New Register House, Edinburgh (see appendix B).

Ministry of Pensions and National Insurance

The records of the Ministry of Pensions and National Insurance are confidential, and are not available for inspection to research-workers. But where, for the purpose of research, efforts are being made to contact people who are not otherwise traceable, the Ministry will consider whether arrangements can be made to forward a letter to the person concerned through one of the registers which it keeps.

These include a register of insured persons, covering everyone over the age of 15 apart from those men and women who were respectively 65 or 60 years of age on July 5, 1948, and those between 15 and 18 who are still receiving full-time education. A man or a single woman can normally be contacted through this register, but a married woman cannot be traced unless her married name is known, and even then her address may not be up to date if she is no longer working.

A complete register is kept also of all children for whom family allowances are made. To trace a child, the full name and date of birth must be known accurately. A letter written to his parents will then be forwarded to the home address provided a stamped envelope is enclosed.

For insurance records applications for a search should be addressed to the liaison officer, Records Branch (Room 103N), Ministry of Pensions and National Insurance, Newcastle upon Tyne, and for family allowances to the liaison officer, Family Allowances Branch, also at the Newcastle office. The full name, date of birth, and the latest known address are essential, and, of course, the national insurance number will help.

Central National Health Service Register

This register, kept at Southport, has several parts, one being a numerical index based on those N.H.S. numbers which were formerly National Registration numbers, and another being a register of persons born in England and Wales since September, 1939, and registered under the N.H.S. The latter includes all patients registered under the N.H.S. (about 98% of the population), and thus provides a fuller record than that of the Miinstry of Pensions and National Insurance. Another important part of the register, an alphabetical index, is not yet complete. Similar registers are kept by the Department of Health for Scotland, Edinburgh.

To make use of these registers either the National Health Service number or the full name and date of birth must be known. A request for help sent to the Registrar General in London or the Department of Health for Scotland will reveal the area executive council with which the patient is registered. An approach can then be made to the clerk of that executive council who may, at his discretion, forward a letter to the general practitioner or to the patient at the last recorded address (though this may, of course, be out of date).

Service Departments

All the Service Departments keep extensive records covering a number of years, though, until recently, there has been no uniformity in the type of record, or in the time for which these were preserved. To trace personnel, the Service number is usually essential, though the full name and date of birth may be enough, provided the name is not too common.

The Royal Air Force

The service records of all Air Force personnel have been kept since 1918, and the medical records are retained in full. An inquiry to the medical department will be dealt with sympathetically. (Officers: Air Ministry, O.A.R., Adastral House, Theobalds Road, London, W.C.1. Other ranks: R.A.F. Records Office, Barnwood, Gloucester.) Letters will be forwarded to the last recorded address.

The Army

Army service medical records are now kept indefinitely, and the War Office will make every effort to assist in tracing individuals by forwarding letters. (Address: Under Secretary of State for War, War Office, London, S.W.1.)

Records of Army personnel treated in military hospitals and Emergency Medical Service hospitals between September, 1939, and September, 1951, are held at the Ministry of Pensions and National Insurance, Blackpool, from whom applications for disclosure should be made. To trace such notes, the patient's full name, and if possible, his rank, regiment, and Army number should be quoted. These records are unlikely to be destroyed in the foreseeable future. In 1951, it was decided to keep Army hospital admission notes for six years only, but abstracts are retained indefinitely by the Army statistical branch.

The Navy

The Admiralty keep service records going back to the last century; those since 1914 in the case of Royal Naval officers and ratings, and since 1939 for the Women's Royal Naval Service, are easily accessible at Bath. Earlier records can be obtained, but only with considerable difficulty. To trace personnel, the minimum information required is the full name and official number or date of birth; the approximate date of enrolment is required also for those who entered the service before 1929. Letters sent to Bath (Admiralty Office, Warminster Road) will be forwarded to the last recorded address, although this may be considerably out of date.

Medical records are kept for twenty years after discharge from the services or after death, while medical hospital admission notes are kept for forty years.

Disclosure of Information from Service Medical Records

A request for information from medical records of Naval and Air Force personnel, for research purposes only, should be made to the Medical Director General of the Navy (The Admiralty, Queen Anne Mansions, London, S.W.1), or the Director of Medical Services at the Air Ministry (1–6, Tavistock Square, London, W.C.1).

The Director General of Medical Services at the War Office will consider requests for information. These should be addressed to the Ministry of Pensions and National Insurance (Norcross, Blackpool, Lancs) or to the Army Statistical Branch (Under-Secretary of State for War, A.M.D.7, War Office, S.W.1), according to the period to which they relate.

Any information is given at the discretion of the medical directors concerned, on the understanding that it is confidential, that care is taken not to publish any particulars that may lead to the patient's identification, and that it be used for research purposes only. It may be thought necessary to have permission in writing from the patient himself before any disclosures are made from the records.

Additional Sources of Information

The following sources are of value in special cases only:

Passport Office

An increasing number of people now possess a passport, and in special circumstances this office will help in tracing former patients who have applied for passports. A stamped letter will be forwarded to the address given in the patient's application for passport facilities. The Chief Passport Officer (Clive House, Petty France, London, S.W.1) requires the full name and place and date of birth for identification, and he cannot trace a married woman by her maiden name only.

Housing Officer of the Local Authority

The housing departments keep records of rehousing after slum clearance, which are retained by most local authorities for many years. The new address of a patient who has lived in such an area can usually be had from the local authority. Records are not generally available for emergency rehousing after war-time bombardment.

Children's Departments

The Family Welfare Association, the Invalid Children's Aid Association, the Children's Aid Society, and the National Society for the Prevention of Cruelty to Children (appendix C) may supply the last known address of persons they have helped. The children's department of the local authority responsible for the care of deprived children, may also be able to supply information about the children with whom they have been concerned.

Adopted Children

Under the Adoption Act (1958), the Registrar General is required to keep records, inter alia, to make traceable the connection between entries relating to an adopted child in the Adopted Children's Register and the Register of Births. He is permitted to disclose information from these records only by order of a competent court, although in Scotland, application may be made by the adopted person himself when he reaches the age of 17.

So it is impossible to get information from the Registrar General for medical purposes. But, if the natural parents or acting guardians are prepared to give particulars, they may remember the area where the adoption order was made, or they may volunteer the name and address of the adoption society through which inquiries may be made in the child's

original name. This society may then disclose the area where the adoption order was made, so that the local authority may be asked to provide a medical report on the child without disclosing his new name.

The Home Office points out that in an inquiry to a local authority or an adoption society one should make it clear that only medical information is required, and not the child's new name or address.

Board of Control

The Board of Control, whose future is at present uncertain, keeps records centrally of all certified patients and patients under supervision, and will put an investigator in touch with the mental-deficiency hospital where the patient is being or was treated.

The records are not destroyed until five years after discharge or death, and the board will allow an investigator to inspect the records after consultation with one of the senior medical commissioners (address: Ministry of Health Building, Savile Row, London, W.1).

In addition the board is kept informed of the admission, discharge, or death of all voluntary patients in mental hospitals. Records of voluntary patients are not destroyed until ten years after discharge or death. But the board has no record of patients treated outside the Lunacy and Mental Treatment Acts, nor of those admitted to mental-deficiency hospitals on an " informal basis ".

The General Board of Control for Scotland keeps similar records, though under Scottish law there is no category of temporary patients, nor do they have mental defectives " under supervision ". The records are retained indefinitely, but in view of the numbers involved there may be some difficulty in tracing patients. The authorities in Scotland are willing to help investigators, and after due consideration are willing to permit case-records to be inspected (address: St. Andrew's House, Edinburgh 1).

If the Boards of Control are wound up, there will no longer be any central library of records concerning mental-deficiency patients detained under statutory procedures.

Aliens Department

The Home Office aliens' department will consider requests for help about visitors to this country. It is willing to forward a letter addressed to an alien provided that at least his name, nationality, and date of birth are known, and provided the investigator has a good reason for wishing to make contact (address: Under Secretary of State (Aliens' Department), Princeton House, 271, High Holborn, London, W.C.1).

The Telephone Directory

The assiduous inquirer will be undaunted by the prospect of searching through the telephone directory—not such an enormous task when the name is uncommon. Telephone calls may find the correct person, or perhaps locate a relative.

Authorities from Whom no Help can be Expected

Census records are of little use in tracing individuals since the precise address at which the person was living on the Census day must be known to start with. In any case information from the Census records in the Registrar General's custody (1861 onwards) is confidential, and is disclosed only with the consent of the person concerned.

The *disabled persons' register*, kept locally by each labour exchange, is purely voluntary, and of small value. There is no central record of registered persons.

No help can be derived from the *central criminal records* at Scotland Yard. The local police are sometimes able and willing to help in locating former patients, but such inquiries tend to create an unfortunate impression in a neighbourhood, and are resented by the patient.

Conclusions

When tracing patients it is advisable to try to make contact with them first through the general practitioner, then through the local health authorities. When this simple approach fails, efforts have to be made to trace the patient or his family through one of the Government agencies, after the full name and date of birth have been verified with the Registrar General.

If the patient is of insurable age (i.e., over 15 in most cases), the National Insurance register is probably the best line of approach. In the case of a child it is advisable to trace the father, whose name usually appears on the birth certificate. A woman who has changed her name through marriage may have to be traced through her husband, parents, or relatives, details of whom are generally given on birth or marriage certificates. When the N.H.S. central register is complete, this may be a useful though cumbersome alternative, but often the register of the Ministry of Pensions and National Insurance is more satisfactory for tracing patients, because that Ministry is willing and able to assist by forwarding inquiries for research purposes.

In all Government departments there is a general rule not to divulge particulars—even the address—of any person without his consent. But they will forward letters to the address in their files, leaving it to the patient to contact the investigator. So it is essential for the investigator to write a sympathetic and cautious letter, for he is dependent upon the patient's goodwill for help. Caution is also needed in writing, to prevent alarming the patient or his relatives by his medical history.

Using these methods, I was able to trace 179 of the 182 hydrocephalic patients. Of the 3 not discovered, one had emigrated with his family, another was illegitimate and his mother could not be found to give details of the adoption society concerned, and the third, who is below insurable age, had probably been placed in a private mental home not under the ægis of the Board of Control.

Had the N.H.S. number of the last 2 patients been known, both could have been traced without difficulty.

Recording of the N.H.S. number or the National Insurance number would simplify the tracing of patients; space for the former is generally provided but rarely used on hospital case-notes. Few people memorise their numbers or carry their N.H.S. cards with them, but with a little persistence this information could be recorded. If, in addition, the National Insurance number of insured persons was included in the case-notes, all difficulties should be eliminated; for the whole population must surely appear in one or other register.

I wish to acknowledge the unstinted help given by various Government Departments, in particular the Ministry of Pensions and National Insurance, the Registrar General's office, and the Boards of Control. Thanks are due also to Dr. N. C. Walsh and Miss N. Oliver of the London County Council health department, Colonel H. Langdon of the Salvation Army, and Mr. J. R. Ready of the records department of The Hospital for Sick Children, Great Ormond Street, for information; to Prof. A. A. Moncrieff for suggesting that this paper be written, and for advice; to Miss M-L. Lépine for secretarial assistance; and to the research committee of the Hospital for Sick Children for encouragement and financial support.

Appendix A

The Registrar General for England and Wales, Somerset House, London, W.C.1.

Charges	*s.*	*d.*
Particular personal search for entry (covering a 5-year period) ..	1	6
Search conducted by the Registrar General (covering a 5-year period)	3	9
General search (requires no specification of a particular entry, must be made personally or by an agent, and may extend over 6 hours on any one day)	30	0
Full extract of entry (after personal search)	3	9
Abbreviated extract of birth certificate only (full name, date of birth, and sex)	0	9
Full extract of entry without personal search	7	6

When a large number of entries have to be checked, and only the full name and date of birth are required, it may be possible to get the information for a reduced fee by special arrangement with the Registrar.

Appendix B

The Registrar General for Scotland, New Register House, Edinburgh, 2. The charges are similar to those in England except that a general search (extending over any 2 consecutive days) is cheaper (20*s*.).

Appendix C

Invalid Children's Aid Society, 4, Palace Gate, London, W.8.
Family Welfare Association, Vauxhall Bridge Road, S.W.1.
Chiidren's Aid Society, 63, Catherine Place, S.W.1.
National Society for the Prevention of Cruelty to Children, Victory House, 15, Leicester Square, W.C.2.

ORGANS PALPABLE IN THE NORMAL ADULT ABDOMEN

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MOST textbooks of clinical examination contain excellent accounts of how to examine the abdomen, but they are less clear on the structures which may normally be palpated.

Chamberlain (1957) says that when the liver is palpable in health its edge is sharp, firm, and regular, but he does not say how commonly it may be felt. The transverse colon when loaded with fæces is often palpable, and in the left iliac fossa the pelvic colon may be felt when its walls are in contraction. "It is not uncommon to feel the right kidney in women . . ."

Hunter and Bomford (1956) say that "In health the lower pole of the right kidney is frequently palpable in persons of spare build, the left seldom so . . . The edge of the liver can only rarely be felt in health."

Appleton et al. (1949) write: "In the normal abdomen the principal structures which may be recognised on palpation are: the lower part of the descending (iliac) colon, and, in some subjects, the kidneys. The pulsations of the abdominal aorta can sometimes be felt." The cæcum is not discussed.

Forbes and Mann (1950) say that the liver cannot normally be felt. "The healthy cæcum . . . can often be felt as a vaguely defined gurgling mass in the right iliac fossa, and a high state of tone in the bowel wall may also render the descending colon palpable . . . In normal people the lower pole of the right kidney is frequently palpable bimanually. Occasionally, the lower pole of the left kidney can be similarly felt."

Cabot and Adams (1942) write: "The large intestine, for the most part, is not palpable; but one can occasionally identify the cæcum, when it is full of gas, and the sigmoid, especially when it is spastic or full of fæces."

We therefore decided to examine young normal adults to find out which structures could be felt, and how often.

Investigation

100 male medical students and 100 female student nurses, whose ages ranged between 18 and 24, were examined when lying on a couch with the head on a pillow. The bladder had been emptied shortly beforehand. Each student was examined by both of us, and we recorded our findings independently. The following order was adopted:

A. Inspection, for aortic pulsation.
B. Palpation:
Left iliac fossa, for the descending colon.
Left loin, for the left kidney.
Left hypochondrium, for the spleen.
Right hypochondrium, for the liver.
Right loin, for the right kidney.
Right iliac fossa, for the cæcum.
Epigastric and umbilical regions, for the abdominal aorta, stomach, and transverse colon.
Hypogastrium, for the pelvic organs.

The examination was made with one hand during quiet respiration. The spleen and kidney areas were palpated with two hands during deep inspiration and expiration. The liver area was palpated during deep inspiration. We stood on the right of the subject, but re-examined the left kidney area standing on the left side.

In addition 15 subjects were X-rayed during bimanual palpation of the right kidney in inspiration and expiration, to investigate the relation of the palpating hands to the lower pole of the kidney.

ABDOMINAL ORGANS FELT IN 100 YOUNG ADULTS OF EACH SEX BY TWO OBSERVERS

Organ	Cæcum		Descending colon		Liver		R. kidney		Aortic wall	
Sex	M	F	M	F	M	F	M	F	M	F
No. felt by one or both observer	85	89	88	90	2	11	0	11	48	90
No. not felt by either	15	11	12	10	98	89	0	89	52	10
No. felt by both observers	76	80	80	81	2	7	0	7	42	80
No. felt by only one observer	9	9	8	9	0	4	0	4	6	10

Results

The results are summarised in the table.

The stomach, pylorus, duodenum, and small intestine were not identified in any of the men or women.

The cæcum was felt as a soft ill-defined squelchy mass in the right iliac fossa of all but 15 men and 11 women.

The transverse colon.—In 1 man only, a sausage-shaped mass lying transversely across the abdomen was felt below the umbilicus. This was thought to be the transverse colon.

The descending colon.—In 88 men and 90 women this was felt as a firm sausage-shaped structure in the left iliac fossa; the hand could be rolled across it from one side to the other without difficulty. Fæces were felt only occasionally, but most subjects had had their bowels open shortly before the examination.

The liver was felt in only 11 women and 2 men. The anterior border was identified as a soft ill-defined edge, descending on inspiration. The 2 men with palpable livers were both exceptionally lean, and had very soft abdominal muscles.

The spleen was felt by both of us at the end of deep inspiration in 2 women; they both gave a history of a recent febrile illness, possibly glandular fever, and their spleens were probably temporarily enlarged. The spleen was not felt in any men.

The kidneys.—The left kidney was not felt in any subject, nor the right kidney in any men.

The right kidney was felt in 11 women, who were each conscious of something being grasped in the right loin while the kidney was being identified. We both felt the kidney in 7 subjects; of the remaining 4, we each felt it in 2 at the first attempt but not later, presumably because it had been displaced upwards by the first examination. In 2 nurses examination was exceptionally easy, and the lower half of the kidney could be felt even in partial inspiration. In the others only the lower pole could be identified at the extreme of inspiration. There was no overlap between these 11 nurses, and the 11 in whom we felt the liver.

Radiography of the right kidney.—In all cases the lower pole lay between the palpating fingers in inspiration.

The abdominal aorta.—Pulsation was visible in the epigastrium in almost all subjects. The aorta was palpable in most

women, but only in about half the men. It was felt in the midline in the umbilical region, and it could be compressed against the lumbar vertebræ. In some very lean subjects it could even be grasped between the fingers and thumb. When much force was used an unpleasant sensation was always produced, and a thrill was noticed.

Discussion

The subjects were all well-nourished, fit, healthy young men and women. We did not somatotype them, although with a larger series this might have been of interest. In those subjects who were thin, abdominal palpation was much easier, because the anterior abdominal wall was thinner, and the resistance of the anterior abdominal muscles was less. Conversely, in the few subjects who were overweight it was much harder to identify any structure. The small group of men and women in whom the cæcum and descending colon could not be felt tended to be obese.

Sex Differences and Muscle Resistance

The authors we have quoted lay no emphasis on the significance of sex difference in relation to the palpability of abdominal organs. We felt the cæcum and descending colon easily in both sexes; the abdominal aorta was palpable in most women, but in only half the men. Although we felt the liver and right kidney in about 10% of the women, we felt the liver even less readily, and the right kidney not at all, in the men.

To the examining hand the resistance offered by the rectus abdominis was much less in the women, and we think this is why the abdominal aorta was felt in twice as many women as men, and why the liver was felt more often in women; the 2 men in whom we felt it were very thin.

There was much less difference between the sexes, however, in the resistance of the abdominal muscles in the right and left iliac fossæ lateral to the recti; this is consistent with our feeling the cæcum and descending colon in about the same number of men and women.

Individual Structures

Stomach and small intestine.—Our experience confirms the view of all authorities that these organs cannot be felt in health.

Cæcum and descending colon.—Most textbooks give no indication of how often the cæcum may be felt. But we found no difficulty in identifying these structures in most of the subjects examined.

Spleen.—The spleen is said to be palpable only if enlarged to three times its normal size, and our findings confirm that it is not usually felt. In 2 women in whom we could feel the spleen it was probably enlarged.

Liver.—In the few subjects in whom we could detect the liver, its edge was soft and ill defined.

Kidneys.—Though most authors imply that the right kidney may often be felt, we were unable to identify it in any of the men (even the few who were very thin) and we felt it in only 11 women. In the 7 subjects in whom we both felt it without difficulty, its identification was far less ambiguous than that of the liver. The right kidney was usually felt between the fingers of the two hands as a hard lump slipping upwards as expiration started.

There are two possible reasons why the right kidney is not felt more often. Either it is too high to be grasped even in inspiration, or the resistance between the hands of the examiner is too great to allow identification. Most textbooks of anatomy state that the lower pole of the right kidney lies about 1 in. above the posterior end of the iliac crest, although Thomson (1891–92), in a series of 264 males and 184 females, found that the lower pole was at the iliac crest in about 10%, and below in 15%.

To investigate this further we took radiographs of the right-kidney region during palpation; in all cases in inspiration the lower pole of the kidney lay well below the level of the palpating hands. Failure to feel this organ is due, we think, to the resistance of the soft tissues between the fingers, and not to the position of the kidney as suggested by Chamberlain (1957). Our view is consistent with the failure to feel the right kidney in any of the men.

The authorities quoted give an impression that the left kidney is seldom palpable; we could not identify it in any of our 200 subjects.

Abdominal aorta.—Cabot and Adams (1942) mention that the aorta can be felt, and state also that it may be grasped between the fingers and thumb, but many authors do not mention this structure. We were often able to palpate the wall of the abdominal aorta as well as its pulsations.

We would point out that this investigation was of young adults with a very limited age range, and our findings are not necessarily applicable to other age-groups.

Summary and Conclusions

To determine which abdominal organs are palpable in normal people, the abdomens of 100 healthy male medical students and 100 female student nurses (18–24 years of age) were examined:

The descending colon and cæcum were felt in most subjects.

The wall of the abdominal aorta was felt in most females, but in only about half the males.

The liver was felt in only 11 women and 2 men.

The right kidney was felt in 11 women but in none of the men; the reason why it is so rarely palpable is the thickness and resistance of the soft tissues and not its position.

Other abdominal organs are not normally palpable.

We wish to thank Prof. E. W. Walls for his constant help and advice; Miss M. J. Marriott, matron of the Middlesex Hospital, for her cooperation; and the students and nurses who volunteered to take part.

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" . . . A great number of demands are made upon our profession nowadays to show leadership and take the initiative in reforming society. We are required, for example, to deal with the growing army of alcoholics in our midst and to dissuade the young from the abuse of tobacco. We are expected to stop executives from killing themselves with overwork and overeating, to transform homosexuals into heterosexuals and to change sexual offenders, by surgery or psychiatry, into law-abiding citizens. The editor of a learned contemporary has recently requested us to assist in the abolition of boxing, and some think that we should take the lead in stamping out that other form of slaughter, the automobile accident. Now all these problems certainly have a medical angle, but we can scarcely be expected to deal with them alone. We have the good of the people at heart, but what if they do not want to be done good to! If people want to get fat and lazy, or drink themselves to death or hit each other, what are the limits of our responsibility to them?" Editorial, *Canad. med. Ass. J.* July 15, 1959, p. 112.

Preliminary Communication

CYTOTOXIC EFFECTS OF HASHIMOTO SERUM ON HUMAN THYROID CELLS IN TISSUE CULTURE

AMONG the characteristic pathological features of Hashimoto's disease are the presence of circulating autoantibodies directed against thyroid constituents and the widespread alteration of thyroid architecture with destruction of thyroid epithelial cells and extensive invasion of the gland with large numbers of lymphocytes and plasma cells.

Previous attempts to link the immunological phenomena with the ætiology of the disease were unsuccessful except for indirect evidence from animal experiments.[1] Passive transfer of Hashimoto serum failed to produce thyroid lesions in the monkey even though the human antibodies crossreacted well with monkey thyroid extracts in vitro.[2] Although preliminary experiments in which thyroid autoantisera were added to human thyroid glands in tissue culture were unsuccessful,[3] further studies have now revealed the conditions under which these sera can effect cytotoxic changes in thyroid cultures.

METHODS

The thyroid glands were obtained from surgical excisions. Monolayers were prepared by trypsin dispersal of the thyroid cells.[4,5] Cultures from Hashimoto glands yielded fewer thyroid cells than thyrotoxic or colloid goitres, required longer trypsinisation, and contained many other cells such as monocytes, lymphocytes, and polymorphs.

Sera were obtained from Hashimoto patients (untreated, or treated with thyroid hormones without surgical intervention) and stored at −20°C without heating for up to ten days before use.

Cultures were made in plastic rings attached to microscope slides and coverslips by silicone grease. Direct examination of cytotoxic changes was made in an incubator box by phase contrast at 37°C using an ×95 lens, and the chain of events was recorded by phase-contrast cinemicrography. The culture medium consisted of 50% test or control serum and 50% diluent. The diluent used was either Hanks fluid with 0·1% 'Difco' yeast extract, or Morgan et al.'s synthetic medium 199 (Glaxo)[6] which appears to be superior.

For the primary culture the trypsin-dispersed cells suspended in diluent were added in suitable numbers to the serum and distributed into the ring chambers, 6–10 of which were set up with control normal serum and an equal number with Hashimoto serum. After 18–24 hours' incubation the thyroid cells in the control cultures were always healthy and well spread on the coverslips (fig. 1). In order to study the effect of Hashimoto serum on established cultures, these were washed with buffered saline and the Hashimoto serum medium added.

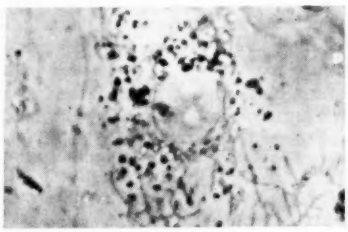

Fig. 1—Normal thyroid cell, showing mitochondria and granules.

RESULTS

The results of experiments are summarised in the table. Thyroid cells grown in normal serum medium can be made to survive unchanged for up to 18 days with the method employed. Primary cultures set up in fresh Hashimoto serum showed few or no surviving thyroid cells at 18 hours, though lymphocytes, monocytes, and polymorphs retained a normal appearance and motility. Fibroblasts could not be distinguished with certainty from thyroid cells in these cultures, so that their fate cannot yet be definitely established.

The replacement of normal serum medium by Hashi-

Origin of gland cultured	Test serum				Result of addition of test serum to:	
	Origin	Thyroid autoantibodies			Primary culture	Cells grown for 18–24 hours in normal serum medium
		Precipitin	Tanned cell titre	CFT titre		
A.B., male, 50 Thyrotoxicosis merging into Hashimoto's disease (untreated for 5 months)	A.B., male, 50 (Same as gland)	++	400,000	512	No growth	Immediate cytotoxic effect
C.D., male, 58 Hashimoto's disease, diabetes, and acromegaly (untreated)	C.D., male, 58 (Same as gland)	++	40,000	4	No growth	Immediate cytotoxic effect
E.F., female, 29 Thyrotoxicosis	M.N., female, 31 Untreated, Hashimoto's disease, rheumatoid arthritis	++	80,000	−ve	No growth	Immediate cytotoxic effect
E.F., female, 29	M.N., female, 31 Heated to 56° for 30 min.	〃	〃	〃	Not done	No cytotoxic effect
G.H., female, 24 Non-toxic adenoma	M.N., female, 31	〃	〃	〃	No growth	Not done
G.H., female, 24	O.P., female, 62 Hashimoto's disease (treated with thyroid 22 months)	−ve	5	256	No growth	Immediate cytotoxic effect
I.J., female, 61 Non-toxic colloid goitre	Q.R., male, 50 Hashimoto's disease (treated with thyroid 12 months)	+	1000	>512	Poor growth	Immediate cytotoxic effect
K.L., female, 35 Thyrotoxicosis with focal thyroiditis (untreated)	K.L., female, 35 (Same as gland)	−ve	250	8	Good growth with extensive mitosis	Not done
K.L., female, 35	Normal	−ve	−ve	−ve	Good growth with no mitosis	Not done

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2. Roitt, I. M., Campbell, P. N., Doniach, D. *Biochem. J.* 1958, **69**, 248.
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5. Pulvertaft, R. J. V. *in* Modern Trends in Pathology; p. 19. London, 1959.
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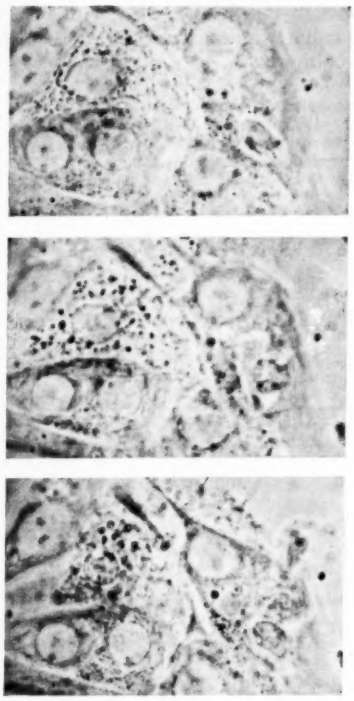

Fig. 2.

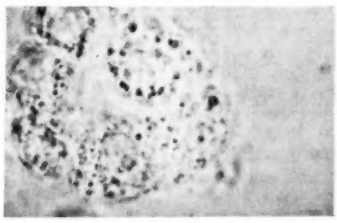

Fig. 3.

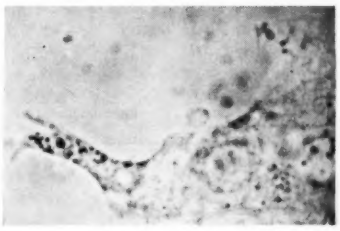

Fig. 4.

Fig. 2—Thyroid cells after exposure to Hashimoto serum. Series from film.

Fig. 3—Thyroid cells after one hour's exposure to Hashimoto serum.

Fig. 4—Monocyte attacking thyroid cells destroyed by Hashimoto serum.

moto serum after 18–24 hours' incubation led to immediate cytotoxic changes which could be observed under phase contrast. Within 30 seconds a darkening of the normally thin and pale filamentous mitochondria was seen, followed by retraction and thickening. The mitochondria then changed from short thick bars to dark solid spheres, and finally to large hollow vesicles. About 5 minutes after the changes in the mitochondria, the cytoplasm began to retract. At the same time the nucleus became translucent and the nuclear membrane thickened to form a sharp clearly defined circle, while the rotation of the nucleus ceased. The cell then lysed and no longer adhered to the glass (figs. 2 and 3). If monocytes or polymorphs were present they quickly migrated towards the dead or dying cells and phagocytosed the debris (fig. 4). In established cultures only a proportion of the cells were affected, and at least half survived the experiment in any one chamber. Pinocytosis was never observed in these experiments, which suggests that the cytotoxic agent does not penetrate into the cells by this mechanism. Hashimoto sera destroyed thyroid cells grown from the patient's own thyroid as well as those from thyrotoxic and non-toxic nodular glands. A strong cytotoxic effect obtained with a Hashimoto serum (M.N.) was abolished by heating it to 56°C, and addition of fresh guineapig complement did not restore activity to the heated serum. The same serum was titrated by dilution with normal serum; some cytotoxic activity was still observed at 5% serum concentration but not at 0·5%.

Thyroid cells grown in normal serum for more than 36 hours could no longer be injured on contact with Hashimoto serum. Since trypsinisation is known to remove a substantial amount of cellular mass,[7] which can later be restored to the cells by growth in a medium containing serum, it was thought that the thyroid cells gradually acquired a protective coating. However, the cytotoxic effect of Hashimoto serum could not be demonstrated in thyroid cells retrypsinised after growing in normal serum for 48 hours.

A primary culture was set up with the serum and the gland derived from a thyrotoxic patient (K.L.) who had low-titre complement-fixing "antimicrosome" and thyroglobulin antibodies and whose thyroid showed marked focal thyroiditis. The cultures survived but the thyroid cells showed large numbers of mitoses, a feature not normally seen in thyroid cultures.

One Hashimoto gland (A.B.) grown in normal serum showed another interesting phenomenon in that the numerous lymphocytes derived from the gland appeared to be attracted to the thyroid cells and moved in close contact with their surface. Groups of lymphoctyes seemed to enter into the thyroid cell cytoplasm (emperipolesis) where they continued to move actively. This has only been previously observed in tissue cultures from malignant tumours including lymphomas.[8] In view of the interesting recent suggestion [9] that malignant cells are sensitised against the patient's reticuloendothelial cells in malignant lymphomas, it is possible that the emperipolesis observed in our cultures is connected with the immunological sensitisation of the lymphocytes in the Hashimoto thyroid.

DISCUSSION

The present experiments provide the first demonstration of a cytotoxic agent in Hashimoto serum active against thyroid cells. This abnormal constituent is not identical with the complement-fixing antibody directed against the cellular "microsomal" autoantigen since this is not destroyed by heating to 56°C and also because good cytotoxic effects were obtained with a serum (M.N.) in which this antibody was not demonstrable. The thyroglobulin precipitin is also heat stable and a Hashimoto serum (O.P.) containing only traces of this antibody had good cytotoxic activity. The cytotoxic agent may be an antibody. There are known instances of heat-labile antibodies of which the reagins are an example. A heat-labile substance behaving as an autoantibody has also been described in a case of hepatic cirrhosis.[10] A study of the organ and species specificity of this cytotoxic activity may help to decide whether an antibody is implicated. Although other human organ cultures have not yet been tested with Hashimoto serum it is significant that only the thyroid cells were killed in the experiments reported, leaving intact several other cell-types present in the cultures.

The failure of our previous preliminary experiments was due to the fact that the Hashimoto sera used had

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either been inactivated at 56°C for complement-fixation tests, or, if freshly used, had been applied to cultures 4–6 days old which are now shown to be no longer susceptible to the cytotoxic agent.

One of the unsolved problems of autoimmunising thyroiditis is the incomplete correlation between the clinical course of the disease and the serum-antibody levels. Thus patients with relatively high antibody titres sometimes have only focal thyroid lesions remaining stationary for many years, whereas a proportion of patients who develop extensive thyroiditis involving the whole gland, and ending in "primary myxœdema" or classical Hashimoto's disease, have persistently low titres of antibodies as measured by the precipitin, tanned-cell agglutination, and complement-fixation tests. It will be of great interest to see whether the presence of the cytotoxic principle demonstrated by tissue culture will differentiate patients with progressive thyroiditis from those with focal lesions of low activity and no clinical significance.

We are grateful to the Clinical Research Committee and to Prof. A. Kekwick for facilities provided at the Institute of Clinical Research; and to Sir Charles Dodds and Prof. F. Dickens for their constant support. We are indebted to the surgeons of the Westminster Hospital for supplying some of the thyroids and to Mr. Selwyn Taylor and Mr. J. Piercy for kindly giving us Hashimoto glands. We thank Mr. J. A. Haynes and Mr. K. Couchman for their skilled technical assistance.

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New Inventions

FELT AND PLASTIC BACK SUPPORT

THIS support (figs. 1 and 2) is made from thin semicompressed orthopædic felt reinforced with plastic. The felt is most economically bought in rolls of 12 yd. × 1 yd.

Materials.—The breadth of the felt, which is fitted before reinforcing with plastic, is roughly the distance from the intervertebral space below T_{11} to the base of the sacrum; the upper edge is trimmed to fit the waist. The felt can easily be stretched to fit around the pelvis and chest, and there is no need to cut darts.

The plastic supports (fig. 3) are:

A. A central reinforced (two $^1/_8$ in. thicknesses of polyethylene) back stay about 7 in. wide, and in length 1 in. less than the depth of the felt.

B. Two lateral supports $1^1/_2$ in. wide, $^1/_8$ in. thick, and in length $1^1/_2$ in. less than the depth of the felt.

C. Two oblique anterior supports about 12 in. long, $1^1/_2$ in. wide, and $^1/_8$ in. thick. This obliquity slopes into the groins to avoid any tendency to dig into the thigh.

Fitting.—The patient stands with his arms raised, the trunk being covered by two layers of thick tubular stockinette to ensure good heat insulation during moulding.

The felt, with the plastic supports in position, is placed in an oven at 140°C (Scales [1] [2] and Brennan [3]) and removed when the plastic has become soft and transparent. The support is then moulded to the body. A manytailed bandage is used to keep it in position and this should be padded posteriorly in order to preserve the lumbar curve. When cool, the support is removed and three 1-in. webbing straps are riveted to the posterior polyethylene stay and passed through leather loops which are riveted to the lateral and anterior supports.

Advantages.—The support costs only about £1 and takes an hour to make. It is more comfortable than a plaster jacket and can be removed for treatment. It not only avoids the delay involved in the making of a surgical corset, but may eliminate the need for this more expensive appliance.

There is no tendency for the support to ride up, and many patients have been able to do heavy labour in it with comfort.

The materials as described above can also be adapted for other purposes—for example, making cervical collars.

We wish to thank Mrs. E. I. Benady, M.C.S.P., who made the splints, and Miss E. Mason of the photographic department, St. James' Hospital, Balham.

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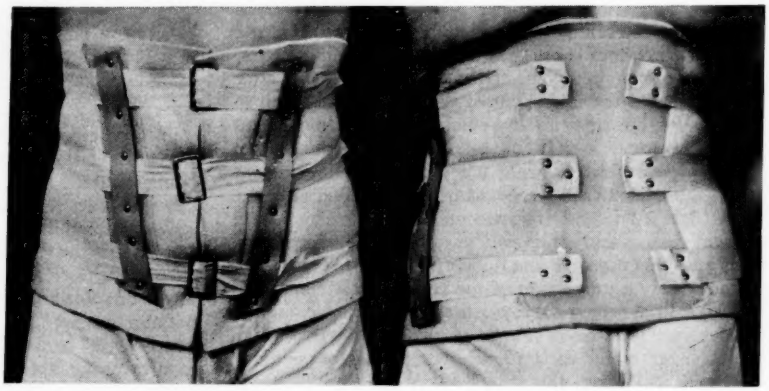

Fig. 1. Fig 2.

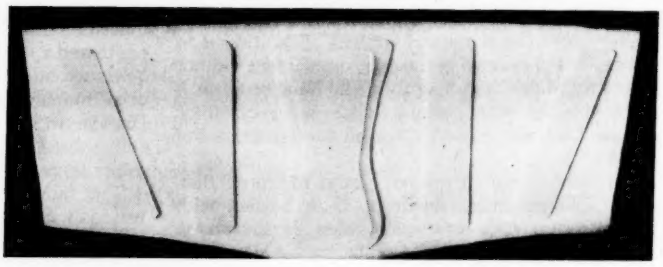

Fig. 3.

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Reviews of Books

Anatomy of the Human Body

R. D. LOCKHART, M.D., regius professor of anatomy, University of Aberdeen; G. F. HAMILTON, M.B., senior lecturer in anatomy, Aberdeen; F. W. FYFE, M.B., associate professor of anatomy, Dalhousie University. London: Faber & Faber. 1959. Pp. 697. 105*s*.

IT has long been rumoured that Professor Lockhart's book would place a strong emphasis on visual elements in the teaching of anatomy. The fact that its 697 pages carry no fewer than 965 figures indicates the unusually high degree of pictorial representation. Indeed, a rough estimate shows that some 40–45% of the area of the text is occupied by figures. The standard of these illustrations is mostly excellent; and some, especially in the section on the central nervous system, are highly original in conception. The artists, A. Morrocco, R. W. Mathews, G. S. Cameron, D. J. Stephen, and W. Cruickshank, are to be congratulated. A small number of the illustrations are below the general high standard, and it is possible to find minor errors in several; but these are flaws to be found in every new work. Similarly, minute criticism of the text will reveal the usual small crop of vagaries, but this is not the place to mention the few blemishes we have detected. The production, typographically and otherwise, is attractive, even if some would prefer a more sparing use of bold type.

Much of the writing is interspersed with the pungent, pithy, and picturesque allusions which would be expected from the senior author, and it is all the more readable for that. Throughout the book there is a lively awareness of the natural association of structure with function. Indeed, the section on the central nervous system is in this regard perhaps the most successful in any textbook suitable for student reading. It is, however, considerably more detailed than the average candidate for the second professional examination could reasonably be expected to digest. This leads inevitably to the perennial question—how much anatomical detail is necessary to the as yet unspecialised medical student? Few anatomists, and few of their clinical critics, have ventured to estimate what the doctor in training really needs in the way of purely structural information; and Professor Lockhart's book provides nothing new in this regard, adhering as it does to what has become traditionally accepted. Some teachers of human anatomy will therefore be as critical of the actual content of his text as they are of those which already ostensibly cater for the medical student, or indeed of those for postgraduates. In both cases there is a regrettable absence of discrimination between what is important to the understanding of the normal human fabric or its diseases and the endless minutiæ with which our curriculum is still burdened. A little more enterprise in this direction would have made this new textbook even more acceptable. As it stands, however, it will receive a cordial welcome in many schools, and it may prove to be the best text yet available for medical students. Its freshness and readability will make it welcome to others also.

One praiseworthy feature of this work deserves special note; all the illustrations have been brought as close as possible to the pertinent printed words. In one section, on the peripheral nerves, the text is so arranged in proximity with the figures that it provides the actual captions for them. Readers with differing tastes will react differently to this mode of treatment; but we believe that, once its initial strangeness has disappeared in use, many students will welcome the practical advantages.

As in most anatomical literature, many of the illustrations appear to be complicated by too many captions—at least, at first sight. Perhaps, however, many readers do not take the trouble to master the technique of learning anatomy from visual sources. Though we must all learn to translate structural fact into verbal representation and back again, we should never forget that the process is artificial. He who has the strongest hold on anatomy in terms of vision will always prove the most successful in using his knowledge, whatever his purpose. Our examination system, with its emphasis on the written paper, tends to obscure this obvious truism. It is particularly on this score that high praise is due to the authors of this new book, in going so far to reduce the verbal semantics of anatomy to a just relation to the visible lore of human structure.

The Ecology of the Medical Student

Editors: HELEN HOFER GEE and ROBERT J. GLASER. Evanston, Illinois: Association of American Medical Colleges. 1958. Pp. 262. $3.

THIS fascinating and challenging book reports the proceedings of the Fifth Teaching Institute of the Association of American Medical Colleges, in which representatives of 86 United States and 13 other medical schools took part. It will interest British readers for three reasons.

Firstly, it illustrates the value of the teaching institute as a method of studying and improving medical education. The institutes were started by the A.A.M.C. in 1953, mainly at the instigation of the dean of Harvard, Dr. George P. Berry, and they have been generously supported by the Commonwealth Fund of New York. Each year some particular facet of medical education is chosen for study, and an inquiry into it is planned by a central committee. Evidence is collected from the schools, collated, and presented to a conference of representatives and discussed in small groups. In this way information, opinion, and experience are shared between schools. No policy decisions are taken, but the results are undeniably stimulating to those who take part, and the new light on difficult problems prompts action in many places.

The second point of interest lies in the central concern of the particular institute which it reports—the impact of his environment upon the medical student, and especially the shaping within the medical school of professional attitudes, values, and self-images. During the past few years a group of very able sociologists and psychologists, perhaps the most distinguished of whom is Robert Merton of Columbia University, has begun to study these problems empirically.[1] A number of medical schools, including those of Cornell, Pennsylvania, and Western Reserve Universities, cooperated with the social scientists, some of whose methods and findings are briefly described in this volume. The techniques used, generally of the questionary type, were contrived with great inventiveness, and include rating scales, attitude scales, and sociometric techniques, as well as more conventional opinion-assessment methods. The variables examined range from cynicism to self-confidence, from the importance attached by students and staff to social and psychological factors in medical care to the degree of student identification with the role of physician; and the material is so organised that comparisons can be made between students of different types, between students at different stages of training, and between medical schools. By no means all the findings are startling; but even those which (in retrospect at any rate) seem to have been fairly predictable are worth documenting, while many are both unexpected and illuminating. When assembled they begin to form at least the outline of a picture of the medical school considered as a social environment, and of the development of professional orientations among its students. To add detail and perspective to the picture it may be desirable to go beyond the use of written questionaries and make more use than have the American social scientists of personal interviews. Time-consuming and expensive though these are, there can be no doubt that they help considerably towards a fuller understanding of social attitudes, values, and behaviour.

The final point of interest in this book lies in the chapter by Dr. John Ellis, who was invited by the Association of American Medical Colleges to participate in the institute and to speak on The Student in the British Pattern of Medical Education. This reasonably fair description of the various factors which influence our students in our different schools makes the reader begin to wonder what effect they have, and to regret that so far so little has been done to find out.

1. See *Lancet*, 1958, ii, 451.

Medical education—and most other kinds of education for that matter—urgently need a little less of partisan debate and assertion and a little more of scientific assessment. The study of medical education as a social process is only one part of the field, and a part which has attracted less attention than the organisation of the curriculum. But to find out more about what is involved in becoming a doctor over and above the acquisition of systematic knowledge and technical skills would not only broaden and deepen our understanding of how we are in fact shaping our students, but would also throw a great deal of light on some of the most important problems of the professions today.

Venture to the Arctic

Editor: R. A. HAMILTON, chief scientist and second-in-command of the British North Greenland Expedition. London: Penguin Books. 1959. Pp. 283. 5*s*.

ACCORDING to its preface, this book aims to tell the man in the street how his money was spent on the British North Greenland Expedition and what sort of researches were carried out, and to prove that the effort was worth it. The theme centres around a little-known part of north-east Greenland, called Dronning Louise Land, where the expedition explored between 1952 and 1954.

In a collection of narratives eight of the scientists discuss surveying, meteorology, geophysics, glaciology, geology, geomorphology, physiology, and the medical aspects. It would be a compliment to the fortitude of the man in the street to expect him to assimilate the lot, but for the more discerning there are 44 references to detailed contributions in various scientific journals, all on the work of the same expedition. Many of the subjects considered in the medical and physiological sections will already be familiar to some readers [1 2]; but the various sections interweave to provide much useful comment upon how man can modify his own intimate environment to survive the severity of Arctic cold and wind. Among the topics discussed are the types of insulating and porous underclothes, the wind and weatherproof top clothes, the design of shelters and huts, down-filled sleeping bags, and how people react to them all.

The medical contributors also touch upon less somatic themes: the selection of men to go on such an expedition, their temperamental interplay, their deprivation fantasies, their highs and lows: how their idea of the Arctic as a gigantic deep-freeze food store could ease the monotony of a needlessly self-denying menu. The authors then go on to undermine some of the long-cherished beliefs of the man in the street: they say it is no use growing a beard to look tough if it freezes up and stops mastication; they decry the British tradition that personal discomfort is nothing short of a virtue on Polar expeditions: they declare that many of the early explorers' journeys were sagas of physical endurance in the face of starvation. They prefer the rational view that research is most successful in conditions of reasonable comfort.

So the man in the street might justifiably ask why medical researchers should hitch-hike on the sledges of those eccentrics who choose to do everything the hard way. Would it not be more sensible to pursue all the essential medical research from the comfort of the huge United States Air Base at Thule, on the opposite side of Greenland, where it is reputed to be equally cold for the purpose? Between the lines of this book perhaps there runs a feeling that we prefer our own hair shirts and flagellations, whatever the cost.

Notable Names in Medicine and Surgery

3rd ed. HAMILTON BAILEY, F.R.C.S., F.A.C.S., F.R.S.E., emeritus surgeon, Royal Northern Hospital, London; W. J. BISHOP, F.L.A., editor, *Medical History*. London: H. K. Lewis. 1959. Pp. 216. 35*s*.

IN his monumental *Introduction to the History of Medicine* Fielding H. Garrison showed how useful a knowledge of medical history can be to the doctor, and gave some questions which he felt medical students should be able to answer. But he admitted that lectures on medical history were often "dry and disappointing". This is also true of many textbooks, and even Garrison's own book cannot be unreservedly commended to the undergraduate. The new edition of Mr. Hamilton Bailey and Mr. Bishop's book may not enable the reader to answer all Garrison's questions ("What was the difference between the first and second editions of Laennec's treatise on auscultation?"), but it will help him to make a shrewd guess about others ("Did Galen write in Latin or Greek?").

Each of the 83 short biographies is illustrated with a portrait, and enlivened by some anecdote more likely to remain in the reader's mind than a list of dates. In this edition several changes have been made in the list of contents, and literally hundreds of new footnotes have been added.

Medical Museum Technology

J. J. EDWARDS, chief technologist, London Hospital Medical College Museum, and M. J. EDWARDS. London: Oxford University Press. 1959. Pp. 172. 21*s*.

THERE are relatively few up-to-date guides to museum technology, and this is the first work devoted entirely to this aspect of laboratory pathology. As should be, the writing comes direct from the hand of the technologist, and the principal author shows a mastery of practical detail which one might expect of him. The text is comprehensive, is sufficiently detailed to provide a practical guide in the laboratory, shows some knowledge of Continental and American methods, and is in excellent English.

Fully half the book outlines the history of museum preparation and exhibition up to the end of the 19th century; it is well informed and freely strewn with scholarly references to the older literature. The Edwards have spared no pains to emphasise the importance of the museum to medical teaching and to show how such collections can be made to live in a way that will attract visitors and draw technical assistants to the museum as a career.

Adoption

MARGARET KORNITZER. London: Putnam. 1959. Pp. 176. 10*s*. 6*d*.

THIS is an admirable book. Miss Kornitzer has manifest and attested knowledge and experience of her subject, and the facts, especially the legal and administrative facts, are all to be found. What is adoption law and procedure in Eire, Channel Islands, Isle of Man? Turn to Chapter XX.

To her knowledge she adds insight, humour, a warm heart, a level head, and the art of writing lucid conversational English, free alike from sentimental slang and scientific jargon. "Love and right feeding soon cure a baby's sore bottom." "It is a curious but lovely thing that an adopting mother's feelings, when later she gives birth to a baby, is so often one of deep gratitude to the adopted child who somehow made the birth possible." "The third thing" (beside name and birthday) "that many older adopted children bring with them is the dearly loved Thing, that treasure which they take to bed at night and reach for first thing on waking."

Intending or actual adopters should all possess and read this book and every family doctor should at least know of it, to recommend.

An Introduction to Surgery for Dental Students (London: English Universities Press. 1959. Pp. 166. 21*s*.)—. This introduction by Prof. R. P. Jepson and Mr. B. N. Catchpole is appropriately brief and yet contrives to cover all the knowledge in general surgery required of a dental student. In essence it is a book of surgical pathology to give the dental student some idea of the conditions he may encounter, with slight emphasis on clinical signs or treatment. It follows the conventional pattern in its approach through wounds and healing in the first chapter, passing to hæmorrhage, inflammation, and burns; thus to the more particular conditions of the head and neck.

1. Llewis, H. E., Masterton, J. P. *Lancet*, 1955, ii, 494.
2. Lewis, H. E., Masterton, J. P. *ibid*, 1957, i, 1262.

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Books or Textbooks?

THE jest about the difficulty of finding a good teaching case in a teaching hospital may be stale, but it serves a useful purpose if it reminds us of the conventional approach that is commonly made to medical teaching. The era of overemphasis on the organic in medicine is not yet passed; so a bump or a lump is gladly seized upon in outpatients as a suitable case for the student, while the woman complaining of abdominal pain for which no definite organic cause can be found is not considered worthy of demonstration. Yet such a condition is often encountered in practice and provides a problem seldom set by manifest organic disease.

Though none would depreciate the value of a sound knowledge of pathology, it is the insistence on morbid *anatomy* as the foundation of clinical teaching which has given organic medicine and its exposition a rigidity no longer compatible with our times; for biochemistry, biophysics, and the revelation of the cell and its nucleus in physicochemical terms are creating a fluid and constantly changing ecos out of the static edifice of pathology as we have known it. No longer is the human cell a structure possessing in the normal, as though by right, a complete integrity, which is shattered into abnormality by *invasion* of, for example, a virus—a conception of normal and abnormal which almost carries with it a connotation of right and wrong. Now we begin to see, though incompletely, a chemical picture, capable of structural interpretation, of the nucleic-acid complexes, and the possibility therefore of bringing genetic faults, bacterial and viral invasions, and even malignant change within one compass by variation of nucleotides. Disease is no longer seen as a disturbance of a certain standard by fell attack from without, but rather as a change within a change; for, in a sense, the cell flows from one physicochemical moment to the next, in which process disease is but an alteration of direction.

In effect science has been changing our philosophy, and fresh processes of thought are needed to grasp the new ideas. Many who practise medicine no longer possess the agility of mind to see the new realities; a lump of wood is a lump of wood, and ever will be so, but never a particular frequency of atomic vibration and thus of molecular structure. Only the young can readily apprehend the new implications and develop new conceptual disciplines within medicine. But will they be able to do so while instruction (as opposed to reason and logic) continues to be so much the basis of medical education in this country? The student is taken by the hand and led round the garden to be shown what plants exist, and how they may be recognised. (Like the keen horticulturist he learns to cherish the rare and anomalous.) His books often have the descriptive quality of a horticultural manual, and they gain enormously in girth as they become works of reference in which each separate genus must find a place—which is probably one of the reasons why Dr. CLARK-KENNEDY felt the need to explain *How to Learn Medicine* in his new book discussed in an annotation this week. Significantly, they have long possessed the prefix text; for from a text the student is expected to learn rather than to turn to governing principles of function and altered function and the application of reason to them. He must absorb facts in abundance so that on a certain day he will be sufficiently equipped to contend first with examiners and then with the conditions he may find in the wide world. It is a hard discipline, heavy on the mind (small wonder that the major scholar at a university can fail sadly at his finals); and it is illogical since it tends to equip men only for the moment at which they emerge as doctors. The facts they have learnt all too soon become irrelevant; and the doctor nurtured under our present system then has little with which to accomplish the constant change demanded by science in his practice of medicine.

If a new age of reason is to replace the long period of didacticism its foundation must partly lie in books (not *text*books) well written so that they may interest students, treating each subject discursively yet concisely and indicating where it may be pursued further. No attempt should be made to be all-inclusive, for the result is deadening. A well-chosen bibliography will encourage critical use of a library (it is odd that no student surgical textbook from Britain, even post-war volumes, is provided with references)—and the young man or woman who has mastered the General Certificate of Education at advanced level can surely be expected to use the library. The task of drastically reshaping the books from which medical students learn calls for stupendous authorship and it is not going to be achieved in a day; but its beginnings must not be postponed on that account, for it is an essential part of the renaissance in medical education.

Communication in Practice

NOWADAYS, when a man or a letter can travel from London to Australia in a matter of days, we often say how small the world is and how easy communication has become. We are apt to forget how hard it can still be to arrange a meeting between two busy men, though both live in the Home Counties, and how long a letter may take to travel forty miles—especially if there are several days' delay before it is typed. Problems of communication such as these may not at first sight seem particularly medical; but in fact medicine, as a personal art, is peculiarly dependent on accurate, speedy, and sensitive means of communication.

Admittedly, the basic form of medical communication—speech between doctor and patient—is little affected by new technical devices. But its content has inevitably been modified by the developing sciences. It is to the good that the doctor recognises, perhaps more clearly than ever before, that he must reassure and help

a patient who may never give the real reason for his coming; for, though little is now unmentionable, much still remains unmentioned. But not only the said and the unsaid lie between doctor and patient. They have always been separated by differences of outlook, education, and language, and these differences have been altered rather than abolished by new methods of communication. The modern patient approaches his doctor with a knowledge of medical terms, treatment, and operations gathered from magazines, the wireless, and television as well as from that perennial source of information " the woman next door ". Some of this knowledge will be helpful, some inaccurate, and some ill assimilated. Against this background the doctor will find communication with his patient no less tricky than in the past and probably more complex.

The translation, interpretation, and explanation of treatment, diagnosis, and prognosis have always been the prime responsibility of the family doctor. Today they are still his, but he has more often to rely on his colleagues for the material of his exposition. Operations in hospital, pathological and radiological investigations, outpatient treatments, and physical therapy in convalescence—are all carried out at a remove from the general practitioner. In advising and guiding his patients and their families about these procedures and about progress and prognosis he depends on the hospital and the laboratory for information and facts. And the more promptly he receives these the more useful they are. In theory, of course, this is readily acknowledged and accepted by all; but in practice the difficulties of everyday routine, holidays, absences, changes of staff, and shortages of secretarial help are too often allowed to delay and interrupt the information which the family doctor has the right to expect. The patient may return to his home at such short notice that it is difficult to arrange for his journey and his comfort; and he may get there many days before the letter in which the hospital is supposed to announce his coming and to bring the doctor up to date about his condition. Moreover, when this letter arrives it all too often proves perfunctory, recapitulating a case-history that is already familiar to the doctor and omitting the more illuminating unknown, such as a candid opinion about diagnosis and prognosis.

Where the patient is well on the way to recovery, such delays and deficiencies may be no more than irritating and discourteous; but where the patient is seriously ill the family doctor is being hindered from doing an important part of his job. A Berkshire practitioner who was recently shocked by the ill-arranged and unannounced return of a moribund patient, writes to us:

> " Death is commonplace in general practice; it can cause shock and emotional disturbances, fears and guilt complexes in spouses, parents, children. In sudden death I frequently deal with these difficult circumstances. In a well foreseen-death it is nothing short of disgraceful to allow them to occur."

In our correspondent's view the hospital, by tardiness, had disregarded his possible contribution as a " specialist in family relations ": it had prevented his helping the patient and his wife to face " a well-prepared death where all the adjustments to be made were normal ones ".

This instance was an unhappy and perhaps extreme example of the difficulties which can be caused by the separation of hospital and general practice. But far too commonly a patient's stay in hospital is a self-contained episode—an interruption of his relationship with his own doctor—rather than an integral part of a continuous course of treatment. As Dr. GODBER suggests in his paper, the proper role of the hospital is to support general practice, and if it is to do this effectively the hospital staff and the family doctor must draw closer together. This, too, Dr. GODBER sees as a problem in communication, and one that would be well worth solving. The family doctor, in our view, should preserve his personal responsibility, and not allow himself to be insensibly absorbed in the hospital service; but the more he knows about his local hospital, about the way it is run, and about the treatment it offers, the better use he can make of it on his patients' behalf. Moreover Dr. GODBER is a firm believer in two-way traffic. The family doctor is (or ought to be) a specialist in human relations and environmental medicine, and if he learns something from the hospital about diseases and the newest forms of therapy, his hospital colleagues should learn something from him about patients and late results.

As a useful example of clinical give-and-take, Dr. GODBER cites the domiciliary consultation; but a consultation, as the very word implies, needs two people, and no amount of correspondence or telephoning can take the place of a personal discussion between colleagues at the patient's bedside. It may be difficult to arrange a time convenient to two busy doctors; but, if the family doctor is a good one, all three parties will gain if he goes with the consultant to the patient's home. Less formal occasions, such as ward rounds, evening clinical meetings, and Sunday morning demonstrations, may all, according to local conditions, offer useful opportunities for contact. They all have the disadvantage that they take time. But it is time well spent; for Dr. GODBER is probably right in assessing "improved communications" as the main problem of hospital and general practice for the next ten years.

Annotations

ASME

THE Association for the Study of Medical Education (ASME) has four prime functions: (1) to exchange information, (2) to organise meetings, (3) to maintain an information bureau, and (4) to encourage, promote, or conduct research in matters connected with medical education; and it has made good progress with them since its foundation last year. At the end of its first year there were over 60 corporate members, including the medical faculties of many of the universities of the Commonwealth, and individual members numbered over 150.

The need for a new mechanism for the exchange of information about medical education has been reflected in the brisk reaction to the creation of ASME: inquiries

1. The address of ASME is Royal College of Physicians of London, Pall Mall East, S.W.1, and the hon. secretary is Dr. J. R. Ellis.

have arrived on a wide variety of subjects from schools and individuals in this and other countries. Visitors from abroad who want to study medical education in Britain now often get in touch with the Association; and universities about to establish new medical schools have also sought the help of ASME. Nothing has yet been done to gather detailed information from member medical schools, because many British schools are at present busy with the reorganisation plans prompted by the new recommendations of the General Medical Council; but any information which schools care to send on current or proposed activities would be gratefully received.

The proceedings of the Association's first conference [2] (on Experiment in Medical Education) will be published shortly; and a conference on Methods of Learning and Techniques of Teaching is to be held in October (see p. 243). Two working parties are also being set up (one on the teaching of psychiatry and the other on the structure and function of teaching hospitals) and the plan is that their reports will be given in conference form next year. Two research projects are now being planned—one a study of the impact of the medical school on the student's personality and outlook and the other an inquiry into the processes of learning.

Travel fellowships will, it is hoped, be one of the most fruitful means of promoting the aims of ASME, by freeing teachers in medical schools, particularly senior ones, from their duties for short periods and giving them time to reflect on their work and medical education in general. The Commonwealth Fund of New York has made available some travel fellowships for this purpose, and the executive council of ASME will gladly consider proposals from medical schools concerning members of their staffs. The Rockefeller Foundation has given substantial support to all these ventures by a grant of £2000 per year for five years to cover the initial administrative costs of establishing the work of the Association.

ASME has thus made an energetic start on its career as catalyst in the changes now brewing in medical schools and we look forward to seeing effervescence or other signs of successful reaction before long.

A DIFFERENT HOSPITAL

IN 1919 Sigmund Freud foretold a day when the modern State would have to provide free psychoanalysis with the same priority as, say, free emergency surgery—though he conceded that the "pure gold" of analysis would probably have to be alloyed with the copper of shorter methods. Since the advent of the National Health Service, Dr. T. F. Main, as medical director of the hospital founded in 1921 by Sir Ernest Cassel for the treatment of neurotic illness, has tried to fulfil this prophecy. From a rigid feudal hierarchy with traditional nursing methods, the Cassel Hospital has become perhaps our most advanced therapeutic community, and Dr. Main's account [3] of its recent evolution is instructive.

It was quickly realised that in a hospital where talking is used instead of drugs the usual institutional pattern will not work; and that, for the neurotic patient, staying in hospital can itself be a serious psychiatric symptom to be taken into account, perhaps from the earliest days of treatment. A dependency relationship with the hospital is always a risk: after three months patients tend more and more to think of life in hospital as normal. Hence at the Cassel full-scale analysis is no longer used for inpatients. They have been encouraged to move from the child-like role—governed by rules—to increasing participation in the work of the hospital and control over their own activities. From domestic work they have gone on to undertake decorating, cooking, maintenance, and gardening. This meant that when staff left there was often no need to replace them; and the Cassel has the distinction of having increased its work while decreasing its costs—from £72,000 in 1953 to £68,000 in 1958, with a reduction in staff (other than doctors) from 42 to 26. Where staff and patients worked together, relations were good—except in the kitchen, where separation became necessary, staff cooking for staff and patients for patients. Changes in nursing techniques paralleled these developments: over-nursing can lead to dangerous regression and it was found that when night staff was reduced there was less trouble at night. Nurses were encouraged to lead independent lives outside the hospital, and uniforms now scarcely exist. Morale has clearly been lifted enormously, and one interesting change has been in the cost of drugs and dressings, which between 1950 and 1958 dropped from £522 to £57. Insistent as he is upon the patient facing a situation as near as possible to real life, Dr. Main has set his face against the usual forms of occupational therapy.

Problems of the day-to-day administration of patients undergoing intensive psychotherapy have been met, over the years, by varying degrees of liaison between the therapist and the doctor running the social side. From this experience more emphasis in treatment is now placed on the social interactions within the hospital and less on extrahospital matters; and, though psychotherapy remains the lynch-pin of hospital work, individual therapy is giving way to group methods, the community approach being increasingly cultivated. Hospital administration remains firmly in medical hands; and it is in fact hard to see how such a community could be run by others than those trained in a dynamic approach to mental illness. The structure consists of four firms (each of some 25 beds) which are largely autonomous and have their own areas of responsibility for the life of the whole community. Social activities, room allocation, duties, and discipline, are undertaken by committees of patients, who show remarkable judgment of the disabilities of their fellows—the kind of judgment (that of the "peer group") which Dr. Maxwell Jones uses so much at Belmont Hospital in his special unit for the treatment of psychopaths. The freedom of action allowed to patients at the Cassel is quite unusual: at their own discretion they may leave the hospital (even overnight), bring in visitors at any time up to 10.30 P.M., indulge in alcohol, and even maintain regular outside employment—freedoms which apparently are not abused. A particularly important side of the work is the boarding of puerperal and other mothers with their young children, as lately described by Dr. Main in our columns.[4] Severely ill women have been able, in this community, to look after themselves and their children within a matter of days without recourse to physical treatments, which are, of course, virtually eschewed. (Most of the patients who are taking sedatives on admission are able, it is said, to do without them within a month.) The average duration of inpatient treatment is some eight or nine months, and the present trend is towards integration of other members of the family

2. See *Lancet*, 1958, ii, 733.
3. Medical director's report in Reports for the Five Years, April 1, 1953, to March 31, 1958, of the Cassel Hospital, Ham Common, Richmond, Surrey. South-West Metropolitan Region. March, 1959.
4. *Lancet*, 1958, ii, 845.

into the treatment programme, developing more out-patient work and cooperation with social agencies.

Of the studies made, a follow-up of 572 patients by letter gave only a 46% response, some 75% reporting "improvement". One would like to know, of course, from matched series of patients, the respective benefits of individual, group, or just milieu therapy; but such a comparative investigation daunts everyone and would be regarded by many as unethical. Nevertheless the Cassel is but one of a number of psychiatric hospitals developing new methods of inpatient care; and surely the time must soon come for finding out more precisely what sort of effects (if any) we are having on what kinds of patients. In his report Dr. Main calls for a larger complement of consultant psychoanalysts; and, as an experimental unit breaking new ground, the Cassel has a strong case for securing these. If it proposed to assess and control the results, the case should be unshakeable. Meanwhile it has shown how very far one can go—even with quite disturbed patients—without recourse to the coercion and restriction which so often lead to greater disturbance. There can be few mental hospitals that could not learn from the Cassel's experience; and general hospitals handling long-stay cases might also gain something from studying methods usually so different from their own.

HOW TO LEARN MEDICINE

BECAUSE the good doctor of today must have not only the best clinical training but also a scientific education of a higher standard than that generally given in the past, medical schools are faced anew with a responsibility which they have not squarely shouldered hitherto—namely, to ensure that their students learn how to learn. As a sign of the times, therefore, a book [1] appears for medical students which does not set out to present either factual knowledge or technical information, but only to advise them how to study medicine. It is one thing to see that advice is needed but another to know how to give it, and many would flinch from being the first to attack this subject in a book. Dr. Clark-Kennedy, however, was able to call on long experience of students in Cambridge and in London and on an even greater asset—considerable courage. This is, in fact, the third time he has ventured into new seas in medical literature, and his pioneer books *Medicine* and *Patients as People* attracted much attention, though they may be too far ahead of their time to stimulate action as well as thought.

Not everyone will agree with all the advice in this new venture. It was naturally impossible to make allowance for the difference in intellectual atmosphere between various British schools, and Dr. Clark-Kennedy has written principally for those schools which still practise what can be described as the conveyor-belt system of medical education. There the student, for upwards of five years, is carried reluctantly through department after department, receiving instruction (and usually good teaching) in each but personal guidance and encouragement in almost none. One reviewer wrote [2]: "It is a disturbing commentary on the present state of medical education in this country that the former Dean of a London Medical School should consider it necessary to write, and a reputable firm to publish, a book such as this". It is, of course, true that the traditional method of university education in this country is personal guidance of the individual and that in most faculties there is sufficient contact between staff and students to ensure that each student is treated as an interested adult, albeit with educational problems peculiar to himself. This has not, however, been so in medical schools; and it is unreasonable to expect that their organisation, which depends upon the pattern of hospital practice, can suddenly be altered to offer the educational facilities of a university and yet leave the traditional methods of clinical training unimpaired. The present state of medical education is a very natural outcome of changes in medicine itself, and perhaps its most disturbing feature is the reluctance with which this simple fact is sometimes accepted.

It is this reluctance which postpones the happy day when all medical students are accepted by all their teachers as adult individuals whose primary task is to learn how to learn. When that day arrives there will be no need for Dr. Clark-Kennedy's book. Until then, however, it will help many future doctors; and there is, after all, nothing new in the idea that reading is an avenue to learning, and that a student can obtain from a book information and ideas which, for one reason or another, his teachers are unable to give him.

In this book the student can find his bearings, for the different subjects of the medical curriculum are skilfully synthesised. He will find clear discussion of the relationships of mind to body—and of medicine to society. He will be reminded that very much of medicine is still unknown and that this point is seldom prominent in text-books. He will be advised on how to study these subjects, and on how to make the best of each method of learning, whether from teachers, from reading, or from patients and practical classes. Most of this he will inevitably find helpful, though parts of it may distress some of his teachers. For example, Dr. Clark-Kennedy issues this warning against "facile teachers of the popular kind".

> "The reputed good lecturer sometimes only explains his subject well because he does not really understand it intimately enough to realise its many inherent difficulties. Not that that fault in him matters very much to you. But what does matter to you is that his exposition may be so facile that he never really stimulates you into thinking and working things out for yourself."

This honest book does not pretend to be a treatise on learning, but to be a practical guide to learning medicine today, in the context of present examinations. Indeed, it could better have been called *How to Become a Doctor*—for, in the author's words,

> "Just as teaching is an aid to learning, so learning is an aid to becoming ..... You can learn to be a technician, and some qualified doctors never get beyond being good, although often exceedingly good, technicians. But you can only *become* a doctor in the real sense, be it general practitioner, consultant, specialist, physician, surgeon or gynæcologist. For good doctoring in any walk of medical practice requires, besides knowledge, judgment and technical skill, a capacity to understand people, experience of the world, appreciation of different outlooks, tact, personality and, above all, a right sense of values."

There was a time when most medical students came to the university with a common outlook, acquired from a common background at home and at school. Happily, students now come from a much wider world and many are naturally unaware of the conventions of the medical profession, and therefore, do not conform to them. Thus, even when absolutely no criticism of discourtesy or disrespect is levelled at the student, there does at times arise an unnecessary barrier between him and his teachers. Not the least of the virtues of Dr. Clark-Kennedy's book is that it will do much to prevent this difficulty by its clear exposition of the conventions of the profession.

1. How to Learn Medicine. By A. E. CLARK-KENNEDY, M.D., F.R.C.P., Fellow of Corpus Christi College, Cambridge, consulting physician to The London Hospital and formerly dean of the medical school. London: Faber & Faber. 1959. Pp. 227. 12s. 6d.
2. *Times Educational Supplement*, July 24, 1959.

PROGRESSIVE PATIENT CARE

THE concept of Progressive Patient Care—doubtless soon to be known as P.P.C.—seems to be advancing in the United States like a prairie fire. In operation in at least one hospital,[1] it already has its own research unit in the U.S. Public Health Service [2] and a four-page bibliography. It seems to have started as an extension of the recovery-unit idea, now almost universal in America: after immediate recovery from their operation those patients who still needed close attention were placed in an Intensive Care Unit, and the same unit took other patients who were critically ill but had not necessarily been operated on. On this plan the remaining patients in the hospital were divided between an Intermediate Care Unit, for those who were largely bedfast, and a Self Care Unit for those who were ambulant and, apart from investigations and therapy, could mostly look after themselves.

Some of what has been written in this context about "organising the services and staff around the medical and nursing needs of the patient" has been a primary hospital objective since at least the days of Miss Nightingale (though she set her face firmly against dayrooms and convalescent wards within civilian hospitals, largely because she insisted that "no patient should be kept in hospital a day longer than is absolutely essential" [3]; but the essence of the new concept is that hospitals should be divided into areas where facilities and staff are proportional to the quantity and quality of the patients' need, irrespective of diagnosis. It is essentially an internal reorganisation of the hospital's accommodation and services, based on the severity of the illness rather than its type. For example, cases which might go to the Intensive Care Unit would include multiple injuries or burns, internal hæmorrhages, some pneumonias and coronaries, and some acute psychiatric disorders, as well as cases following major operations. The Intermediate Care Unit—which will have the greatest proportion of patients—will cater for the moderately ill, such as patients admitted for palliative treatment and those with the less acute medical and surgical conditions. The Self Care Unit will include those who need some form of investigation or treatment which they cannot get as outpatients, and also convalescents.[4] The complete picture is filled in by adding Long Term Units for the chronic sick, and Home Care Programmes run from the hospital; but these raise wider issues.

These arrangements recall the proposals of Professor McKeown,[5] [6] based on a survey of Birmingham inpatients. McKeown, however, divided the patients into those who needed full hospital facilities (54%), limited hospital facilities (9%), limited hospital facilities with mental supervision (31%), and no hospital facilities (6%); and his plea was more for integration of the chronic and mentally sick into a "balanced hospital community" than for a new classification of the acute sick. In principle such integration is already being widely accepted, though its achievement will inevitably take time.

The main claims made for the American type of Progressive Patient Care based on the experience of the Manchester Memorial Hospital [7] are that it helps to solve the problem of scarcity of trained staff, and that it improves the service to patients without increasing its cost. Neither of these two claims is yet proved. In the first place, it is not certain that the total number of nurses, doctors, and other professional staff needed is less for the same number of patients and for the same standards of care. Clearly, the American system of single-bed or small wards makes admission of surgical, medical, pædiatric, and psychiatric cases to the same unit easier than it would be in the larger open wards to which—almost alone in the Western world—we still cling: but the Americans already recognise the difficulty of foreseeing the demands on the Intensive Care Unit and thus making full but not excessive use of the staff, and the cloven hoof of heresy may be seen in the suggestion of providing "a number of beds on the unit for patients who are less critically ill than those in the intensive care room". What is called in the jargon "patient satisfaction" is said to be improved, but "the patients really move around", and a doctor is quoted as never knowing where his patients will be when he arrives—which conjures up a somewhat alarming prospect for doctor, nurse, and patient. But basically, this seems to be a nursing problem, and the decision will turn on whether division into levels or areas of intensive, intermediate, and minimal care, or our present system of hospital units in which all three levels of need may be found in adjoining beds, is the best for the nursing of the patient.

Certainly, the rigid classification of beds and units by specialty is already being relaxed, to the increased efficiency of the hospital, if also to the confusion of its statistics; and one lesson may be that, since a hospital is said to be out of date by the time it is opened, the utmost flexibility in planning and construction should be a cardinal principle. It has long been apparent that the provision of all the facilities of an acute hospital for all the patients who go to that hospital must be wasteful, and that some zoning by "need" should be economical (not only in money) provided the patient does not suffer. The greater interest now being shown in hostel-type beds is evidence of this concern.

Though much work has already been done in the States on model plans and schedules of accommodation and equipment, it would clearly be unjustifiable to spend public money here in building a new hospital on lines which would allow it to be used only on a plan not yet shown to be effective. Yet we must hope that funds may be found for trials of this new concept of hospital organisation, which may prove practicable in a hospital designed on more orthodox lines.

Sir ROBERT YOUNG, consulting physician to the Middlesex Hospital and the Brompton Hospital, died in London on Aug. 22 at the age of 87.

We also have to announce the death on Aug. 22 of Sir FRANCIS TEALE, lecturer in bacteriology and in immunotherapy at University College Hospital Medical School.

Dr. RICHARD TRAIL has been elected master of the Society of Apothecaries of London.

1. Manchester Memorial Hospital, Manchester, Connecticut.
2. Haldeman, J. C. Elements of Progressive Patient Care. U.S. Dept. of Health, Education and Welfare: Public Health Service. February, 1959
3. Nightingale, F. Notes on Hospitals; p. 114. London, 1863.
4. Haldeman, J. C., Abdellah, F. G. *Hospitals*, 1959, May 16 and June 1.
5. McKeown, T. *Lancet*, 1958, i, 701; see also Garratt, F. N., Lowe, C. R., McKeown, T. *ibid.* p. 682.
6. McKeown, T. *The Hospital*, July, 1959, p. 58.
7. Report on Progressive Care—it works. *Modern Hospital*, May, 1958, p. 73.

Special Articles

TRENDS IN GENERAL PRACTICE *

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THE National Health Service has had its effects on every branch of medical practice; but it is, after all, only a method of making medical and allied services generally available in a modern society, and while it can and does provide opportunities for the practice of better medicine it does not determine what the nature of that better practice should be. It is as well to say that now, because there are some who speak as if medicine practically dates from 1948 and others who like to imply that it virtually died then.

A profession should always tend to improve its quality and its service to society, and I believe that our profession has that tendency, as it has that tradition. When society takes on the collective responsibility of providing medical and allied services to its members, it ought to do so in such a way that that inherent tendency in the profession is fostered and encouraged. I am not so foolish as to think that the Health Service has been completely successful in this, but I do believe that it has helped in various ways and can and will help more in future. It is the custom with some ill-informed critics, especially those visiting from other countries, to claim that medicine has been regimented and that clinical interference in the doctor's method of practice is common. In fact, the first ten years of the Health Service has at least established that it need not and does not interfere with clinical methods in general or in hospital practice.

Treatment and Diagnosis

Let us consider first some of the revolutionary changes in medicine in recent years.

The first was the introduction of the sulphonamide group of antibacterial drugs just over twenty years ago. Within that twenty years most of the common bacterial infections have been brought under some degree of control, and in the same period active immunisation has helped to prevent many illnesses which used to harass children and young adults. But this power to control bacterial disease does not mean that the general practitioner no longer has to deal with it. Paradoxically, he may have to deal with it a good deal more, because now he can usually treat it himself, quickly and effectively, without reference to hospital. The antibiotics have made it possible for the practitioner to do things for his patients, and to save lives, on a scale he could not have envisaged twenty years ago. He is not concerned only to diagnose a disease which, if it is serious, someone else will treat. For instance pneumonia, save in the elderly without facilities for home care, may be safely and effectively treated at home instead of being whisked off to hospital. This is the opposite of the picture some will paint of general practice, but it is the fact that students do not see patients with lobar pneumonia in hospital now—not because it does not occur but because it need not go there.

The antibacterial drugs were only the beginning of the pharmacological and therapeutic revolution through which we have been passing; and, though they have to be used with understanding, they mostly have a fairly wide margin of safety. Some of the other new drugs, such as the corticosteroids, have far greater hazards with which the general practitioner has to be familiar. For instance, long-term treatment of coronary-artery disease with anticoagulants requires careful clinical observation supplemented by regular laboratory tests. To give double the therapeutic requirement of vitamin B_{12} would be expensive but not dangerous; but to do the same with phenindione might be lethal. Changes in the pharmacological armoury are rapid and the practitioner cannot very long rely on the therapeutics learnt at his medical school. To keep abreast of the best methods of treatment for his patients he must read far more widely than his predecessors needed to do.

Nor have medical advances been limited to therapeutics: diagnostic techniques have advanced at least as fast. Everywhere in this country general practitioners now have access to pathological and radiological facilities, and in a great many places they have direct access. In 1957, 5% of all the work of hospital laboratories and 9% of all the radiological work was done on direct reference from general practitioners, and since 1949 the total use of these diagnostic services in the Health Service had increased by at least a half for radiology and four-fifths for pathology. These advances have made it possible to use in general practice some of the precision tools of medicine which formerly were available to few. Probably these tools could be used a great deal more. The Kingston experience was that more than three-quarters of the pathological work was done for less than a quarter of the practitioners. For the whole country, the total work done for general practitioners in hospital laboratories in 1957 amounted to less than 150 units of work per doctor —equivalent to one test for every 40 of his patients a year.

Hæmatological investigations like prothrombin-time estimation in coronary disease, hæmoglobin levels, and rhesus-factor investigations in pregnancy, and perhaps some of the newer virological studies, will be needed more. Chest radiology is already used extensively by general practitioners—mainly through mass-radiography units and chest clinics. Now that the newer 100 mm. camera units have proved themselves, it seems likely that every hospital centre will provide a chest-radiography service direct to practitioners, so that radiological clearance can be readily obtained after any lower respiratory disorder which does not quickly resolve. In 1956, mass-radiography units examined 200,850 patients for general practitioners; and this group, though only $^1/_{18}$ of the total examined by the units, provided $^3/_{11}$ of the cases of active tuberculosis and more than half the cases of carcinoma of lung which were detected.

Specialisation and the Practitioner

During this period of scientific development, specialisation in hospital practice has increased sharply, and the National Health Service has undoubtedly made the process general, even in the smaller hospital centres, and accelerated its progress. Though the trend toward solely specialist staffing of general hospitals was clearly evident before 1948, the N.H.S. made it possible to finance specialist practice wherever it was needed, and a lot of well-trained specialists who were partly in general practice turned wholly to specialist work, while many other newly trained specialists came in. Consultants now number almost 7000 in England and Wales, an increase of at least 45% since 1948.

This process of increasing specialisation is often bemoaned as the exclusion of general practitioners from hospital work. In fact it did remove a small number of general practitioners from hospital posts in the first year

* Abridged from an address at a symposium on general practice at the Department of Human Ecology, Cambridge, February, 1959.

or two, and probably a larger number of hospital staff withdrew from general practice. It did not make a new division but it made an existing one more complete, for very few senior hospital staff are now in general practice. Nevertheless about one general practitioner in four still has a salaried post in the hospital service—though admittedly a small one, since the total time so given adds up to less than the equivalent of 500 whole-time staff. Of course, the complaint most often heard is that practitioners rarely now have charge of beds for acute cases—something that very few of them had anyway—but I am by no means sure that all of them want it. Yet just over half this work is in clinical-assistant posts, and in addition to these salaried posts almost 10,000 beds are in the charge of general practitioners—equal to nearly a third of the number available to general physicians—including almost a sixth of the maternity beds in all hospitals.

If the past twenty years have wrought great changes in general practice they have made even greater changes in hospital practice. Total hospital medical staffs have increased by at least 45% since 1948 and there is still a great shortage of junior hospital staff especially of United Kingdom origin. Something like a fifth of all staff below the senior-registrar grade graduated abroad; so we are certainly far from equilibrium between the product of our own medical schools and the staffing of our hospitals. The increase in staff has been partly the result of increasing specialisation; and every step in this direction differentiates more sharply between the content of hospital and general practice.

Some would say that specialisation has gone too far and will be reversed, but I put no faith in that. Take the extreme example of cardiac surgery, a specialty within the specialty of thoracic surgery. I have watched an operation on the open heart during which there were nine doctors at work in the theatre, and five of them had to be men of consultant status. It may well be that most cardiology, urological surgery, and even neurology will still be done by general physicians and general surgeons, but I am sure that these smaller specialties will be used more and more on a consultative basis within and between hospitals. It may be that chest physicians will in future be more of general physicians with a special interest, and specialists in infectious diseases and in venereal diseases will be fewer; but anæsthesiology is already a specialty with its own subspecialties, and it is now rare to find a general surgeon dealing with fractures.

All this development within hospitals makes it very unlikely that there will be a reversion to staffing of acute general hospitals by general-practitioner specialists. The general-practitioner influence seems likely to reassert itself in hospital practice in a different way; for, aside from staffing, another change in hospital methods is having an increasing effect on general practice. Between 1949 and 1957 the number of admissions to hospital increased by about 30% without a comparable increase in beds for acute cases and mainly by a progressive reduction in length of stay. Though most noticeable in surgical specialties, this change has affected all specialties including geriatrics and psychiatry. It is not the result merely of an attempt to deal with waiting-lists but also of a progressive change in clinical method. It is sound rehabilitation to prevent degeneration due to inactivity and sounder still to promote early return to the familiar surroundings of home—provided always that home is fit for the convalescent.

Recognition of this had led to a conscious effort to treat inpatient care as an incident to be avoided if possible or kept short. Similarly outpatient services are used increasingly for investigation and treatment for whatever patients can be managed in that way. For general practice this should have a greater significance than has yet been recognised. Perhaps hospitals have been too possessive in the past and they are now beginning to be used in the more appropriate role of supporting services for home care. Certainly shorter stay is practicable only because everyone now can be fairly certain of getting medical and allied care at home. The general practitioner is able to use the hospital for part of the treatment of his patient's illness—a part that he leaves to someone else.

Increasing specialisation has also favoured more rapid turnover of hospital beds.

The number of patients admitted to beds for plastic surgery more than doubled between 1949 and 1956; a comparable increase has taken place in thoracic surgery and neurosurgery; and some of the other specialties (e.g., orthopædic surgery and dermatology) have shown increases of 50% or more. One cause of this larger turnover has been the diversion of beds from general surgery or general medicine to the special departments; but another is the great reduction in the wastage of bed-days in such departments. The specialty of neurosurgery, dealing mainly with waiting-list cases, shows one of the highest proportions of available bed-days used. By comparison, the increases in admissions for general surgery and general medicine are only about 20%, and over the same period admissions to pædiatric beds have fallen by 11% although the number of pædiatricians working in hospital has risen.

This affects general practice in various ways. The range of specialist services available generally is far greater than it was ten years ago; and we all know that wherever a new service is established, a lot of work not previously known to exist comes to it. (For instance, the establishment of a neurological service in Southampton led within a year or two to a very large increase in the load on the London neurosurgical centre which served that area.) In this way, changes in the services offered by hospitals have a direct impact on the work and interests of general practice: the existence of highly specialised departments leads to better detection of the relevant cases in general practice in the area around.

The process is still far from complete, for the introduction of special departments is often resisted by men in the established older specialties who do not see the necessity for highly specialised advice. But it cannot be a rational arrangement that only a quarter of the neurologists in England and Wales should work outside the four Metropolitan regions, although two-thirds of the population live outside those regions; either the Metropolitan regions have too much or the rest far too little. So soon as facilities are provided in a new area, the need for them becomes evident. There is probably a good deal of work to be done which is not now being done, and when a new service is provided close at hand it does more than divert patients who formerly went to a distant centre.

I give these examples to underline one of my main points. The hospitals are said to have been set apart from the practice of medicine in the community: specialisation is said to be making association more difficult. I very much doubt whether that is really true. In the old days, only a small proportion of general practitioners held hospital posts, and other general practitioners may well have found it harder to link up with these practitioner colleagues, in their specialist capacity, than to link up with specialists who were not in general practice.

When a highly specialised service is developed, the general practitioners very quickly begin to make use of it.

Indeed, they often make use of it much more readily than clinical colleagues in general medicine and general surgery. The direction of patients to the new departments depends upon practitioners, and increasing specialisation within general medicine and surgery is likely to oblige them to discharge some of the functions that were formerly theirs in the decisions on timing and nature of treatment.

Contact and Consultation

The exchange of information on patients, whether at the outpatient department or from the wards, rapidly leads to a much wider understanding of the capacity of the hospital service to deal with a fresh class of patient. Nevertheless, the interchange is not nearly free enough, and I think the main problem for the next ten years in both hospital and general practice is to improve methods of exchanging information between the two sides. This is not a one-way affair. The general practitioner will naturally learn from his specialist colleague in the reports he gets on the scientific aspects of diagnosis and treatment of particular conditions, but the specialist will learn what he needs to know about the person whom he treats, as opposed to the disease from which the person suffers, only by his communication with the general practitioner and through social workers.

There is a social medical element in general practice which has as yet all too little representation in hospital work. We have only recently begun to appreciate the part played by psychological factors in physical disease, or at least we have only recently begun to talk about it. The time has come to talk about it a great deal more and for the general practitioner to make his contribution with the specialist in the treatment of his patient in hospital, just as the specialist should make his contribution to the practitioner's subsequent management of the patient after a stay in hospital or a visit to the outpatient department.

This is the commonest example of the point I have previously made, that the hospital service is a supporting service and not the centre-piece of medicine in an area. Things can be done in hospitals that cannot be done in general practice: lives can be saved there which could not be saved by any form of home treatment. But most treatment takes place outside hospital, and the benefit of specialised hospital treatment can be most widely disseminated if it is supplementary to the treatment the patient will seek from his own family doctor.

One of the complaints patients most often make is "They never tell you anything"—"They" being the rather impressive and sometimes impersonal professional inhabitants of hospitals. Patients sometimes make the same complaint about the general practitioner, but much less often, because he is so much more accessible and familiar with their background and their families. They look to him for advice and they get it in intelligible terms. They seldom see enough of the hospital doctor, particularly in situations that permit confidential discussion, and they do not always see the same man. Yet if the patient is to receive the physical treatment that he needs and the psychological support to which he is entitled, he must be given an explanation of his illness and of what should be done for it. No-one can do this better than the general practitioner; but he cannot do it unless his hospital colleague fills in his part of the picture completely and quickly. The writing of letters is one way of conveying the facts, and it must often be the way that is used; but we must surely find means of more direct exchange and discussion if the most is to be made of the medical facilities available in hospital and in the home.

Attempts on these lines include clinical demonstrations, Sunday-morning ward rounds, evening clinical meetings, and the like; but though they all help to spread information in general terms, none of these gives quite the same ease of interchange as the consultation in the patient's own home. In the days of private practice, an essential part of the consultation was that the practitioner and consultant should see the patient together in the home, but in domiciliary consultations under the National Health Service this is unfortunately not always done. There may be occasions—e.g., a visit by a pathologist to take a specimen and report upon it—when meeting at the bedside would not help; but even then the pathologist will need to explain and discuss his findings on the telephone, if not in person. At present, each general practitioner in the N.H.S. calls for about 14 domiciliary consultations a year, and though the commonest calls are in general medicine and pædiatrics, pathology and psychiatry are rapidly increasing in their contribution.

A practitioner who requests a domiciliary visit unnecessarily often can be doing a disservice to the consultant and to the community, while undermining his own professional responsibility; but a practitioner who fails to use the domiciliary service adequately is, almost certainly, acting unfairly to his patients and to himself. Consultant and general practitioner must consult as often as they can and not merely correspond; and if we do not keep that object in mind we certainly will not achieve the continuity of medical care which must be the objective of good family practice.

Obviously the obstacle to all this is time—lack of it for hospital staff and often greater lack for the general practitioner—at least at times of mutual convenience. How much time does it, in fact, require?

Suppose there really is an "average" general practitioner with an "average" practice of 2200 and an "average rate" of admission to hospital from it. At any one time just under 1% of his patients will be in hospital, and in a whole year about 180 will pass through hospital. Of the 20 or so in hospital, 14 will be in wards for the chronic sick, mental hospitals, mental-deficiency institutions, or sanatoria, leaving only half a dozen in beds for acute cases—medical or surgical. In the whole year fewer than 40 will have passed through any of the acute medical wards, more than half of them having been emergencies; 12 will have been in gynæcological wards and nearly double that number in obstetric wards (sometimes under the practitioner's own care); and over 70 will have been in some kind of surgical ward. Of course on top of this there is the outpatient work, which will have involved one out of every seven in the practice. It all adds up to a formidable total of interchange, and there is indeed need for a vast exchange of information between the different doctors concerned. For this purpose more personal contact is wanted; and an active medical society is always a help. In some of the largest centres, where contacts are harder to achieve, arrangements have been made for times when hospital staff are available to discuss with their general-practitioner colleagues.

I do not think one pattern can or should be devised, but if we could all accept a little more clearly the need for these personal exchanges I think it would be possible to bridge a real gap within the profession. "No man is an island unto himself", and that is more true of the doctor in regard to his profession than John Donne asserted for

mankind as a whole. We are peculiarly interdependent among ourselves and none can now be self-sufficient.

Content of General Practice

The recently published study on morbidity in general practice (Register General 1958)—the successor to two smaller studies between 1951 and 1954—has given a clearer picture of the content of general practice than we have had before.

It recorded a rather smaller number of services per patient on the list than some previous estimates suggested. This may mean that the practices were not " average "; but, whatever the explanation, the consultation-rate for the year was only 3·8 per patient on the list, with considerable variations by age and sex of patient and by geographical situation of the practice. About two-thirds of all patients on the lists consulted the doctor during the year—about an eighth for a common cold, a tenth for bronchitis, a tenth for rheumatic disorders, and a fifteenth for psychoneurotic disorders. It has been suggested that this all adds up to a collection of trivia; but these people must have needed help, and they had to be sorted out from the substantial number of people with illnesses beyond the scope of immediate treatment in general practice. On this basis the " average " practice would throw up 16 cases of coronary disease, 10 of cerebrovascular disease, 10 of myocardial degeneration, 25 of pneumonia, 12 of cancer, and 6 of respiratory tuberculosis. Hospital treatment does come into the management of these major conditions, but not exclusively; and it is a large part of my thesis that the practitioner's concern is not abrogated thereby.

This is no place to start a discussion on size of lists, but it is worth quoting one figure which can be derived from the Morbidity Study:

> A singlehanded practitioner with a maximum list of 3500, working the notional 38½-hour week on which consultant contracts are calculated and having the average consultation-rate of this survey, would be able to give an average of seven minutes to each consultation, including travelling time and any time occupied in supplementary activity—e.g., telephoning a hospital. Obviously 38½ hours would not be enough even if he spent no time in visiting hospitals or doing any of the other supplementary jobs which go to make good practice. He would clearly work a lot more hours than the " notional " consultant's week.

Contrasting Patterns

Our pattern of general practice is very different from that of many other countries. We stand somewhere between the Scandinavian and the American forms.

In the United States most practitioners have some kind of hospital position—not salaried, just rights of access of varying degrees. Even the big teaching hospitals have very large " visiting staffs ", some of whom are restricted to a narrow range of responsibilities. Nearly half the doctors licensed to practise are accepted as specialists by the specialty boards, whose criteria, though not as strict as the standard undefined but expected of consultants here, is still quite formidable. In some States any licensed physician in good standing has a right to hospital facilities, and in some of the smaller hospitals he may undertake a wide range of specialist work in several specialties. Indeed, a rather elaborate system of accreditation of hospitals has had to be introduced to ensure that standards are high enough. Group practices like those in the Health Insurance Plan of Greater New York consist of groups of specialists of all kinds with or without general practitioners. Sometimes specialism is carried to extravagant lengths, like that of " vestibulotomist "—the man who does only fenestration operations for otosclerosis. As a result of all this, patients tend to go straight to some specialist who, they think, fits their needs. H.I.P. are even having to try to re-evolve general practitioners in their groups. Patients tend to get a lot more diagnostic investigation, whether they need it or not. Where general practice is good I have been assured that, despite access to hospital beds, it is no better than good general practice here and where it is bad it can be bad in a lot of ways that can't occur here, just because of that access to hospital beds.

> They get some other things too: Nolen and Dille (1957) record that of the 793 residents of Igloo, North Dakota, during a period of five years only 60 (8%) were *not* given antibiotics, and estimate that in less than half the 2936 episodes in which antibiotics were given was such treatment warranted.

At the other end of the scale in Sweden there are far fewer doctors, and a general practitioner is appointed to a district, with a house and clinic facilities, after perhaps ten years' preparation in junior hospital posts following seven or more years of studentship. He usually has minor X-ray and laboratory facilities with one or more trained public-health nurses to help him, and because the nurses do a large part of the visiting he gives fewer services per patient than is usual here. He has had a fairly wide hospital training in different specialties and is a very experienced doctor; but paradoxically, he is quite cut off from the general hospitals, and his patients go there freely for outpatient service without any reference from him. As in the other Scandinavian countries, partnerships hardly exist, and in the rapid progress of modern medicine it must be very difficult to keep the self-sufficiency with which such a man starts.

There must be some way of getting the best of these two widely different methods in our own middle way. The Swedes undoubtedly have a much more systematic postgraduate hospital experience, but it goes on so long that they must also miss the particular human or social values that our own type of family practice tries to cherish. Moreover, although self-sufficiency in medicine may no longer be possible, the use of nurses as intermediaries, as they are undoubtedly used in Sweden, hardly seems a sound policy. On the other hand, the American method though it does keep more of the profession with active interest inside the hospitals, does not give any real guarantee of either the level of specialist care or the human values of family practice. We here seem to have reached a distinction between hospital and other doctors quite as sharp as in Sweden, but we still have an interchange between the two via domiciliary visits and the consultative outpatient department which the Swedes use much less. To me, it seems clear that we must make the methods of that interchange easier and the collaboration closer and avoid any suggestion that one form of practice is above or below the other, even in the most high-powered of teaching centres.

It may be possible to facilitate this by better organisation of general practice and by different methods of staffing in hospital. I once heard a prominent member of the General Medical Services Committee say that it should be possible for him to decide that he would like to " do a few anæsthetics this morning " and then go along to the hospital and " do " them. Well, as a possible patient, I would rather not be " done " in just that way, and I am sure that " hospital rights " for all general practitioners is not the answer.

Health Centres and Groups

Since 1948 one very striking change has been taking place in general practice. About half the practitioners then were singlehanded, now less than a third are. Moreover, only a fifth of the youngest age-group—below 35—are in single-handed practice as compared to nearly half of the men over 65. Some partnerships already had provided group premises for their practices, and since the group-practice loans fund was set up in 1953 over 100 other groups have been helped with interest-free loans to provide their own premises. One of the most recent of these at Bushey has been so arranged that it can be linked with county-council clinic premises and so conform quite closely to the health-centre idea. Harlow has had health centres provided in other ways but fulfilling the intention of the National Health Service Act (Bach et al. 1958). Some health centres have been provided by local health authorities and one by a university.

Premises provided in any of these ways help the quality of practice by giving it better physical aids; but the contribution made by meeting, discussion, and mutual support is far more important than any economic or merely physical benefits. I would put first this benefit of consultation between colleagues; but a group working in this way can also give its members time to take on other work in hospital or for local health authorities, which adds to the collective experience of the group and has its own effect on the quality of their medicine. I feel sure that this is the most significant change in practice organisation in the past ten years and that it will go on. Singlehanded practice is possible, of course, and even necessary in some places; but I think the day will come when it will be unusual in a country where nearly everyone lives within a reasonable distance of some centre where a group could be established.

The University Health Centre in Manchester and the Diagnostic Centre at Corby propound a different question —do practitioners need X-ray and laboratory services on the spot? The Darbishire House doctors in Manchester are in no doubt that this is an advantage, even though the Royal Infirmary is only round the corner; they think that the quality of practice is genuinely raised. Certainly it would be a formidable undertaking to equip all group practices similarly, and with present shortages of radiographers and technicians it might be impossible to staff them. Nevertheless we cannot pretend the question is not there and one day we shall have to answer it.

Darbishire House has enjoyed another service in the presence of its own social worker. Similarly, in Oxford one practice of three doctors has had a health visitor allocated to it—and this experiment, too, has been an unqualified success. These are two examples of the need to think again about another aspect of general practice—the participation of other professional workers in it. In various places—e.g., the William Budd Health Centre, Bristol—health visitors have begun to work more closely with practitioners; but these are the only examples known to me in which the principle of partnership is carried to its logical conclusion. In hospital the doctor-nurse team has been so long established that it is accepted as the natural order of things. Social workers have achieved a somewhat similar though less close association. Why should we not try to make a reality of the " domiciliary team " of which we have heard so much? Of course it will not work everywhere, but that is no reason for not trying to make it work where we can. Home nurses, midwives, and health visitors, all or any of them, might be brought into some groups. There are difficulties, but are they really insurmountable? They were not in Oxford.

Preventive Medicine

So far I have said little about prevention, but it is an activity in which the general practitioner should play a much larger part. Active immunisation programmes are easy enough—at least they are easy to define—but prevention is a much more comprehensive problem than that. (In fact, the general practitioner does not do all he might on active immunisation, much of which is still done in clinics. I do not decry this work in clinics at all, but I think practitioners will do more of it themselves in future.) The preventive work which only the general practitioner can do effectively concerns other diseases such as glaucoma, where early diagnosis alone will save vision, or diabetes, where early control of blood-sugar levels may prevent the late vascular and degenerative complications which are now the main causes of mortality in diabetes. It is a sobering reflection that the first person to diagnose diabetes is as likely as not to be the ophthalmologist. Early diagnosis (as in glaucoma or carcinoma of the cervix), prevention of recurrence (as in rheumatic carditis), and even the simple warning that leads to better lighting or an extra handrail on the stair used by an old person are all contributions to health that the general practitioner can make better than anyone else. There are indications that the public-health side of the profession is beginning to appreciate how much preventive medical work in future must be done with and through the general practitioner.

In the social management of mental illness the great reform now in progress will lead to very different methods. Outpatient care is increasing more rapidly in this specialty than in any other, and day hospitals are likely to be set up in most large centres. Physical methods of treatment like electroconvulsion therapy have made short cuts possible, but the fundamental change is in social rather than technical medical methods and these are bound to involve the general practitioner. Practitioners like C. A. H. Watts have shown how far understanding guidance can go to help the family in managing psychoses in the home (Watts 1954). Besides the psychoses there is also a much larger number of minor mental disturbances which present in the guise of physical disease or exacerbate it. Balint (1957) has described how much help the good practitioner can give in this way, and it may be that—given the time—this is the part of general practice in which we shall see greatest development.

Science—and Humanity

Finally, there is research. General practice does not lend itself to abstruse scientific studies, but it does provide unique opportunities for the study of morbidity and the natural history of disease. We really know remarkably little about the prevalence of many common conditions and some have been differentiated for the first time only by cooperative studies by general practitioners. The report on Morbidity Statistics in General Practice has already given us a more comprehensive picture of the pattern of morbidity than many years of collection of statistics on a much larger scale has done before. The many special investigations which the College of General Practitioners has in progress are also a cause for great encouragement, for nothing could show more clearly the liveliness of mind that is vital to our profession. A new tool has been developed that will not only add much to

our knowledge but will also operate continuously to raise the quality of general practice as a whole.

Above everything, the general practitioner of the future will face the difficulty of keeping himself informed, and I believe that, because of this, the foundation of the college will prove to have been one of the most significant medical developments of the second half of the 20th century. The science of medicine cannot fail to progress —the specialists and the scientists will see to that—but humanity in medicine is an even greater thing, and good family practice is our chief guarantee of its survival.

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Occasional Book

THE NATURE OF EXPERIENCE

" Now, Sir Ransom, we shall have to have sunshine in ourselves today. There is none outside for us. But that should not be difficult for fortunate people like ourselves."

" Are we so fortunate ?"

IVY COMPTON BURNETT, *Darkness and Day*.

MOST branches of learning and of science are compounded of the two elements of information and opinion. It is very doubtful whether there is any particular branch of learning in which the element of opinion is so large and that of information so small as in philosophy, and the multitude of its differing disciplines in a way bears testimony to the scantiness of verifiable facts. In the past few years it has become the fashion for scientists of all types to enter philosophical fields, in the belief, arrogant but natural, that they have obtained from their particular specialty scientific details which will enable them to propound philosophical ideas of greater reasonableness or cogency than those put forward in previous eras by philosophers whose powers of scientific observation had necessarily been rather restricted. Amongst the many scientific disciplines which appear to lead naturally to the exposition of philosophical ideas, that of neurology is perhaps the most fertile and there has grown up in the past two or three decades a veritable cult of what might justifiably be called neurosophy. Neurosurgeons have embarked on discussions of the site of consciousness, the seat of the soul, the location of memory, and of other aspects of mental function, deriving their ideas very largely from the evidence which they believed they had obtained from their surgical and neurophysiological experiences.

It is, of course, very tempting to adapt to the interpretation of philosophical activity that information which is made available to us all by the careful study of cerebral function. Few of these interpretations have been more interesting, pleasing, or informative than the excursions made by Sir Russell Brain into this penumbroid dimension of neurological activity, and it is with the most pleasurable feelings that one now reads his Riddell lectures [1] on the Nature of Experience, recently delivered at King's College in the University of Durham. On previous occasions Sir Russell has found it difficult to accept the answers given by philosophers to his own questions about the nature of the physical and the perceptual worlds, and in 1951 he made one of his first essays in the differentiation between the conceptual and the perceptual.[2] He continued thereafter, notably in a Maudsley lecture [3] in 1955, to discuss the relationship between perception and imperception. He was clearly dissatisfied by his readings of the philosophers, and in the first of his three lectures, entitled Vision and Fantasy, he is at pains to indicate the dilemma which resulted from the limited scientific equipment of the philosophers: as he puts it, " Philosophers are often ignorant of, or take too limited a view of, important empirical facts ". On the other hand, he also feels that " scientists are apt to be content with too simple a description of them ". The neurologist as a scientist has available certain details of the mechanisms of perception which he is able to utilise in a philosophical (or ought one to say neurosophical) fashion to explain the precise significance of the world as we perceive it.

No informed reasoning person can disagree with Brain's neurological explanation of the sense datum theory which holds that the event immediately preceding, or even synchronous with, the perception of an object in our physical world is an event of a physicochemical kind in the observer's cerebral cortex. Even abnormal sensory experiences such as illusions and hallucinations require the same sort of physicochemical phenomenon in the cerebral cortex of the subject as does the normal appreciation of objects in the physical world, and Brain rightly draws attention to the fact that such internal phenomena may also be produced by brain disease, as is the case in the sensory aura associated with certain forms of cerebral tumour, and the auditory abnormalities occasionally associated with other types of epilepsy. The bizarre accompaniments of normal perception which occur under the influence of lysergic acid and mescaline may also be regarded as examples of the way in which physicochemical activity in our cerebral cortices may modify, as well as be stimulated by, the perception of the external world. It is useless for the philosophers to object that the evidence provided by the hallucinated patient or one who is under the influence of drugs does not form valid evidence in relation to the sense datum theory, for this evidence serves to show the neurologist that perception is the end-result of a series of physical events the last of which is in fact a state of activity of the brain of the percipient. This state of activity differs so completely from the events occurring in the object which one perceives that as far as the observer is concerned the whole world of our perceptual experience is basically a construct of our cerebral activity. This is the main basis of the sense datum theory. It is a basis which to most neurologists must be regarded as incontrovertible on the evidence now available.

It so happens that this particular exposition of the mechanism of perception, which seems so reasonable to those of us who feel we comprehend the neurophysiology of sensation, has its philosophical background in the logical materialistic work of Descartes, Locke, and Hulme amongst others, though as Sir Russell Brain says the actual term " sense data " appears to have been introduced by Bertrand Russell as recently as 1912. One would have hoped that with the increasingly accurate information obtained from neurological, neurosurgical, and neurophysiological study the modern philosophers would have been able to accept, to elaborate, and to consolidate the ideas expressed by the earlier philosophers

1. The Nature of Experience. By Sir RUSSELL BRAIN, F.R.C.P. London: Oxford University Press. 1959. Pp. 73. 8*s*. 6*d*.

2. Brain, W. R. Mind, Perception and Science. Oxford, 1951.
3. Brain, W. R. *J. ment. Sci.* 1956, **102**, 228.

who had not the benefit of recent scientific observation. Strangely enough it is amongst the more lively of the newer philosophers that one finds the sharpest critics of the sense datum theory, and in the second of his lectures Sir Russell turns to the task of " criticising the critics " of the sense datum theory. He sets out the objections of Ryle, Paul, Ayer, and George amongst others, all of whom basically reject the causal theory of perception and all of whom incline to the idea that we have direct knowledge of external objects. Sir Russell regards this as a confusion of thought for he believes that the " receptive function of the cerebral cortex is to provide us with a symbolic representation of the whole of the external world . . . all this information of course is given to us not merely for the sake of pure awareness or contemplation but in order that we may act, hence it is linked in ways with which we are familiar with the motor activities of the brain ". What is more important is that our perception of these external objects is orientated in relation to the position of our own bodies and that our bodies may actually contribute to our awareness of the spatial relations of these objects in the external world. It is essential to realise that sense data are not transmitted from inanimate physical objects, they are engendered by the brain itself as a result of the stimuli received from these inanimate objects through the mediation of neurological activity. This is not to say, of course, that these inanimate objects such as books and tables are actually generated by our brains for since other people are aware of them and since we have information that they continue to exist when no-one is aware of them we are able to infer in neurological fashion that they have an independent existence of some kind. We can, therefore, regard these objects, which continue to exist whether we perceive them or not, as physical objects. On the other hand, the things which we perceive, perceptual objects, belong to our own private perceptual space in which *all* perceptual objects, hallucinations, illusions, and those physical objects which result in sense datum, may be permitted to exist. For the hallucinated person, hallucination is seen " as actively as the same object occurring in physical space ". This idea of perception also serves to explain the phenomenon of the moving picture, for even the most hardened opponent of the sense datum theory must accept that it is by the function of our cerebral cortices that a series of still pictures, exhibited in rapid succession is transformed into an impression of actual movement.

If one accepts this explanation of a perceptual world one has no difficulty in associating oneself with Sir Russell's extension of the idea towards emotional overtones of perception. The psychoanalytical concept of the father-figure is used to explain how a given person's emotional attitude to his own father may persist to influence subsequently his attitude to others who, by virtue of their age, or their position of authority, may in some way resemble his father or otherwise recreate the father situation. The " personae " created in society by various uniforms, as, for example, those of the judge and the nurse, represent the way in which our own perceptual equipment may contribute in an important fashion to our social reactions towards these representatives of society. In short, much of what we perceive is our own contribution to the perceptual object. Thus the acceptance of the sense datum theory of perception makes the interpretation of a number of the observations of the psychoanalysts understandable in terms of scientific neurological and neurophysiological concepts.

In the third and perhaps the most interesting of these stimulating lectures, entitled Symbol and Image, Sir Russell turns first to the philosophical interpretation of art which he regards as the embodiment of feelings in perceptual form. The complexity of the art process, both subjective and objective, is fairly easily resolved by the acceptance of the sense datum theory. A physical object is modified by an artist until it assumes in his perceptual world the form which embodies his feelings—the manner of representation depending to some extent upon his competence as an artist. This physical object so created is available to form representations in the perceptual worlds of observers. In so far as their senses are acute, and in so far as their minds may be attuned either by their nature, or by their training, or by their experience, or even by their knowledge of the artist, they may find similar feelings of their own embodied in the act of contemplation of the art form. In this sense, one may regard art as the communication of feelings. What Sir Russell does not say, but what he implies, is that it may be a vehicle for the mutually projective embodiment of feelings and not necessarily a direct communication between one being or another—in other words, we have what may be regarded as a squared effect of the sense datum theory of perception, for it is perfectly possible that in these circumstances the sense data elaborated in the brain of the observer of the picture differ as much from the sense data originally elaborated in the brain of the artist, as did those sense data from the object initially evoking the artist's appreciation. The total failure of certain observers to comprehend the potential beauty of an artistic creation is thereby easily understood. There is need for us to contribute something of our own experience to the proper appreciation of the work of art. If one accepts this idea (and this may be a misrepresentation of Sir Russell's intention) one must inevitably accept his view that works of art are not merely symbols but are images of feeling. The square-root of minus one is a symbol for it can stand for nothing else; but the work of art, embodying so many variables in the artist's mind and capable of so variable an interpretation in the observer's mind, is clearly something quite different and probably very much more important.

How interesting it is to turn with Sir Russell towards the consideration of abstract or non-representational art in terms of the sense datum theory of perception. The outraged horror expressed so commonly by the horse-drawing type of conservative Academician stems on the whole from his failure to appreciate the possible implications of abstract art in terms of images of feeling. The work of the (later) Picasso and in particular the sculpture of Henry Moore differ from the photographic forms of their respective arts in that they embody imaginative expressions of emotion and that they represent not objects but feelings of the artists in relation to given objects. As an extension of this, though often more difficult of appreciation to those untrained, is the potential value of that newest type of art in which the artist uses merely colours or shapes or both not recognisable as representing any known object, either in the natural or in the transmuted imaginative form alluded to above. If, however, we recognise that such artists are seeking not to represent natural objects but only their feelings aroused via the physicochemical relationships envisaged by the sense datum theory, it may be possible for us to appreciate the intentions of these artists. It is important to recall, as

Collingwood [4] said, that the real truth about painting is that the spectator's experience on looking at a picture is not a specifically visual experience at all. What he experiences does not consist of what he sees, it does not belong to sight alone, it belongs also to touch.

The next portions of this absorbing discussion are devoted to the place of music and poetry in the relationship between the symbol and the image. But by an act of transmogrification the neurosopher presents himself to us in relation to the interpretation of music in the guise of the semantic philosopher, for although only a brief space is given to the considerations of this important subject there is an unexpected absence of scientific observation and an equally obstrusive appearance of the semi-pontifical assertion. Sir Russell begins by saying that in this aspect of the problem we enter a sphere in which the creation of images is indeed more difficult to understand. He rightly dismisses the simple idea that certain sounds and rhythms are moving to us because they are linked with the electrical rhythms in emotional centres of the brain. On the other hand, when he poses the question "of what then is music the image?", it is perhaps faintly disappointing to those who believe in an essentially scientific approach to this problem, to have him reply "can we not say that music through its very relation to the structure of time itself, awakens echoes in that mystery which is the essence of our being, our life's transience and inextinguishable hope that time itself is only a mode of apprehension". Perhaps the very brevity of his discussion of the subject is an unconscious confession of his unwillingness to apply to it the scientific techniques with which his earlier reasoning is so beautifully distinguished. May one dwell with regret upon the omission of any discussion of the relationship between the evanescence of the musical sound and the difficulty of its interpretation as an embodiment of feeling? Perhaps we may look in the future to a more detailed scientific exposition of the significance of music as an artistic image.

It is clearly with some relief that Sir Russell (and his reader) turns to the significance of poetry. He regards poetic creation as the creation of a particular kind of verbal image which uses for its purpose the arrangement of words in relation to rhythm, metre, rhyme, assonance, and, of course, meaning. He likens it to painting and sculpture and as a scientist draws attention to the fact that one need not take sides between the romantic and classical in the true appreciation of poetic art. A poem is a special form of communication of ideas between the poet and his reader and like the work of visual art depends upon those factors of cerebral activity which play so important a part in the production and appreciation of the painting and the sculpture.

And what of religion? As a text on which to build up the discussion of this aspect of his talks, Sir Russell takes the assertion by Ogden and Richards [5] that religion should be classed with poetry as being composed primarily of emotive language. "A poem—or a religion", they said, "has no concern with limited and directed reference. It tells us or should tell us nothing . . . what it does or should do, is to induce a fitting attitude to experience". Sir Russell believes that the images employed by art and poetry (and religion) enable us to apprehend experiences in which objects, thoughts and feelings are all blended, whilst physical science employs mere symbols to convey to us the structure of the physical world. Yet there is one point at which direct apprehension and indirect apprehension meet and that is in the brain of the percipient. In other words, the symbols of science and the images of art (and religion) *may* combine to give us "knowledge of the nature of things both beyond our immediate experience and the structure of the physical world revealed by science". Can we logically proceed to accept the propositions of this fusion and so to regard as valid the claims of religion that its symbols really refer to the universe? Agag-like, Sir Russell treads delicately as befits an orator in philosophy in Durham. His brief historical synthesis of the religious concept of God beginning with allusions to the book of Job and to the wisdom of Solomon, and passing on to the apprehensions (or doubts) of Spinoza, St. John of the Cross, Fox, Harvey, Goethe, and onwards via the poets to Sherrington, leads him to conclude that the philosopher may well question the postulates of philosophers, religionists, and poets, as long as he does not believe that his failure to answer his questions necessarily invalidates these postulates. Although symbols—the constructs of science—may be used in the representation of physical forms and may play a part in creating images in the same way that words play a part in poetry, it is the images themselves which provide the more adequate interpretation of life; we can have no adequate knowledge of the universe without feeling. So ends this elegant triology, a compound of science, imagination, and logic. If there are those who may doubt its logic they will yet admire and applaud its science and its imagination.

4. Collingwood, R. G. The Principles of Art. Oxford, 1938.
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The Widdicombe File

LVI.—OF COLLEGES AND THINGS

DEAR IAN,

No, I'm not going to rehearse again the arguments for and against the College of Pathologists. Dyed in the wool and Simon Pure physician though you are, you cannot be altogether ignorant of activity in that direction. For the arguments and the history, I refer you to McMenemey's paper in *The Lancet* last year (ii, 841). Perhaps, however, before I embark on any wider theme, I'd better make clear my own views (which are I think those essentially of most academic pathologists of my vintage) on this matter of our College.

I will support a College of Pathologists to the uttermost if it is once founded: but I hope it will not be founded. Its foundation will be a retrograde step, a further splintering of the front rank of medicine: but unless the existing Colleges (and in particular the Physicians) do something drastic, constructive, and soon, to meet the very real and legitimate dissatisfaction of pathologists, it will inevitably be founded sooner or later. And finally, more domestically, though the Association of Clinical Pathologists has made all the running and seems perfectly capable of carrying the whole matter through on its own, if we *must* have a College it had better start with both its legs functioning, and it would be a thousand pities if the senior, larger, and internationally far better-known Pathological Society withdrew the hem of its garment at so vital a time. The two societies successfully divide their functions on most occasions, but this is no time for prudish over-insistence on the detachment from political matters of even so learned a society as the Pathological. In due proportion, the same applies to some other learned societies concerned with laboratory medicine.

Enough of detail, however. It seems to me better at this stage to consider not just the College of Pathologists, but the general question of the Colleges and their relationship to the body of consultants as a whole.

In the first place it seems to me that the Colleges are not a necessary and inevitable feature of medicine as it is practised today. They were founded in the days when Universities thought surgeons beneath their notice and physicians above practical instruction, when there were no negotiating bodies for any part of the profession and no scientific societies of any kind. Nowadays all their essential functions could at a pinch be taken over by the Universities and the B.M.A.—the learned societies have already long overtaken the third function. If we had never had Colleges, we would hardly now find it necessary to invent them. But we have them: and, after all, most of what they do they do very well. Moreover, they are not only a vested interest, but as picturesque a feature of the traditional British scene as the Tower or the Trossachs—a medical tourist attraction in fact—and we are not likely to lose them. There is indeed a lot to be said for them. It is no accident that the Presidents of the Colleges, and above all the P.R.C.P., are far better trusted as spokesmen of the profession than are the elected medical politicians. And there is no doubt that to those who belong to them the Colleges form a unique source of reputation, professional solidity and moral support.

To those who belong to them! Rough-polish it how you will, there's the rub. Given the College system, those parts of the profession that have a College benefit from it: those that don't, do not—or not so much. Considering only consultants, this means that if you are a Physician, or a Surgeon, or an Obstetrician and Gynæcologist you're well in: if you're some other kind of consultant or would-be consultant, you're out. (Beatnik-wise, we pathologists are so far out we're coming in.) Of course, I exaggerate. But would you, Ian, as an honest Physician, altogether deny that there is the faintest shred of truth in what I say? As the Pharisee thanked God he was not as other men, do not Physicians preen themselves ever so slightly on not being Pædiatricians, or Psychiatrists, or Pathologists? Yet the truth of the matter is that it is just as hard to be a good pædiatrician, or psychiatrist, or pathologist, as to be a good physician.

Besides, we're all equal now in the eyes of the National Health Service. Of course I am prejudiced, being one of those who have been equalised upwards, but it seems to me that one of the better things about the N.H.S. has been the levelling up of consultants. In the bad old days the standing of a specialty was measured largely by its cash value. Since few men will pay as much to a pædiatrician who treats his child as to a physician who treats himself or his wife, pædiatrics used to be, except for a few masters, an unprofitable and ill-regarded line. As for pathology, unless you landed a chair or peddled vaccines, you needed a private income if you were not just obviously to cease to belong to the same species of animals as the clinicians. *Nous avons changé tout cela.* Let us be grateful for it. But in consequence the Depressed Areas begin to wax fat and kick.

The pathologists are first in the field for the simple arithmetical reason that they are now the largest coherent body of consultants in the N.H.S. without a College. Logic absolute: there is no reason except historical accident why the pathologists should not have a College if they want it, equally with the Physicians and the rest, given only that they have the numbers, the determination, the cohesion, the reputation and the money to back their wishes. And having got it, they will (barring gross ill-luck or mismanagement) be very much the gainers by it.

Well and good then. Why am I kicking? On a strictly selfish view as a pathologist, I should and would welcome the College. But when one looks further, at the effect on the whole body of what for want of a better word one must call consultant medicine, one has cause to think. The schismatic tendency in medicine has been obvious since the first surgeons jeered at the first physicians, but this represents a significant and dangerous acceleration of the process. Others will follow. The Psychiatrists have, I would guess, nearly as good a case as we have. Whether they have any plans for founding a College I do not know, but beyond doubt they will. And then perhaps the Pædiatricians and the Dermatologists. Forecasts beyond that need prevision of the future history of medicine, but Colleges of Gerontology and Medical Administration are good guesses. He would be a foolhardy man who would set a limit to the possibilities of a century's growth and differentiation. Rival Colleges of Ferrous and Ferric Metabolism? Surely no-one will doubt that this splinter process we are initiating is a bad thing. But how are we to avoid it if it is so manifestly to the advantage of the splinterers? By no possible means it seems to me that does not consider the whole corps of consultants as an entity, and treat all the trades within them as equal in everything but numbers.

The logically perfect solution is the fusion of all the Colleges into an all-embracing Academy of Medicine. That has been much mooted in the past, but never come to anything. (Though Glasgow, womb of so many medical inventions, has had for several centuries a college, modestly called a Faculty, which is just such an all-embracing academy.) With the N.H.S. it would seem to have become a more practical proposition than it used to be, but there is something too monolithic and Eastern European about it: the English genius does not lie that way, preferring to make over old institutions to new functions (like the Admiralty Court trying divorces); and my guess is that, barring catastrophe, any solution must use at least the nominal framework of the existing institutions.

You will know, of course, Ian, if ever you look as far east as Lincoln's Inn Fields, that a sort of solution has in fact already been adumbrated by the Surgeons. The radiologists and the anæsthetists have Faculties within the College of Surgeons: inside their own Faculties they are their own masters, running their own examinations and deciding who will bear their Fellowships. One gathers the machinery works not too badly. The Surgeons, for all their faults, have always been just that little bit closer to reality than the Physicians, and it is not surprising that they have recognised the need and done some necessary operative repair work. But workable though their solution is after a fashion, to my nostrils it ever so slightly, but penetratingly and ineradicably, stinks. For it presupposes, and proclaims, that the radiologists and the anæsthetists are something a little less than the surgeons, and I will not be party to any such damaging admission—it tolls for me, it tolls for me! When my foot is on my native lab, my name is MacGregor, MacMuir, MacVirchow, MacMorgagni: I will not (speaking for my mystery, and not for myself) call any man my master.

Smell though it may of patronage to the purist, this

kind of solution could well prove to be what we have to accept. If the Physicians do not want a College of Pathologists, and the dismal train that will come at its back, the least disturbance to themselves would follow the offer of a subordinate faculty within the College of Physicians. Given terms of reasonable generosity, we could not easily refuse. Perhaps it is too much to suggest that the physicians themselves form a Faculty of Physic within their own College, which might then become, on the model of the Universities, a concert of faculties equal in status though not necessarily (since numbers vary) equal in power. Do not boggle too much at the idea, Ian—it might be the best solution of all in the long run. But what I would most like to see is the simplest and honestest and most straightforward solution of all—the admission of pathologists (and, ultimately, others) to the College on the same terms as physicians, by an examination that would test their suitability in their own chosen field, and not demand skill in the one narrow field of bedside diagnosis that the College clings to so obstinately as the sole test of virtue.

Whatever the detailed solution, the Physicians must recognise that their own brand of medicine, though still one of the focal points, is of steadily diminishing *relative* importance, not because it diminishes itself (rather the contrary) but because so many other things grow up around it: and the College must either reconcile itself to being truly representative only of a shrinking fraction of the profession, or to accepting a diversity of disciplines under its roof.

The College of Pathologists is not an issue for pathologists only. It presents a crucial challenge to the existing Colleges, a test of their largeness of spirit and their ability to change to meet the changing needs of the age. Let us hope your College will meet the challenge worthily and wisely. A good part of the future pattern of consultant medicine in this country may well depend on it.

and so I commit you to the tuition of God
from my College (if I had it)
the sixth of August
your loving friend,

PETER DAVEY.

The Wider World

THE CLOCK PARADOX

FROM A CORRESPONDENT

A BIRTH certificate of the not very distant future may well contain this instruction:

"Each time you land on Earth you are required to fill in the following details: (1) duration of voyage in G.M.T.; (2) duration of voyage in ship's time; (3) normal speed of ship."

Bureaucracy gone mad? Not at all—merely a very necessary precaution to prevent a hale-and-hearty space traveller of 40 claiming the old-age pension because he was born 65 years ago.

When Einstein formulated the theory of relativity a number of consequences arose, some of which could be tested by direct experiment.

The most striking of these was that a ray of light should be bent when passing close to a massive body; at the next total eclipse of the sun it was found that certain stars whose light passed near to the sun were out of place by the right amount to confirm the theory.

Perhaps less striking at that time, but nowadays disastrously easy to confirm, was the statement that matter could be converted into energy; the theory indicated that 1 ounce of matter fully converted into energy would boil 6 million tons of water; for better or for worse the atom bomb is a convincing argument in favour of the theory.

Another consequence of the theory could be stated thus:

If two identical stopwatches are started at the same time and if one of these is caused to travel at high speed—say, for example, on a rocket ship doing a return journey to one of the fixed stars—then when this watch returns it will show that less time has elapsed than that shown by the watch that remained stationary at home.

In fact, if the moving watch had for most of its journey travelled at, say, $^7/_8$ of the speed of light, then it would only have indicated half an hour for every hour shown by the watch which stayed on Earth.

Now the calculation applies equally to any time-keeping device whatever, of which the human body is undoubtedly one; so the young man of 20 who sets out on a round trip to one of the nearer stars, and has a ship capable of reaching $^7/_8$ of the velocity of light, may well return 45 years later having aged only some 22 years by the ship's clock with which his body will certainly agree.

Of course a rocket ship capable of $^7/_8$ of the speed of light is not something of the near future, but one capable of reaching say $^1/_5$ of the speed of light is not inconceivable if nuclear power continues to develop at the present rate.

A rocket which could maintain a continuous thrust of 1 G, thus giving the occupants the illusion of remaining on Earth, would reach $^1/_5$ of the speed of light 60–70 days after starting.

Such a rocket ship if it "coasted" from there on could make the round trip to the nearest fixed star in about 40 years' earth time, while the crew would have aged only 38 years.

This, then, is the famous "clock paradox" [1] which has been the subject of much learned and sometimes heated discussion.[2]

Einstein's theory says that it will happen. Can the layman see how it does happen, and can it in fact be proved to happen by any conceivable test?

The answers are respectively No and Yes. Unfortunately the conditions under which the effects of the theory of relativity are at all clear are never part of human experience; if they were we might all partake of Alice's adventures.

It is, however, possible to go some way towards seeing what happens to the high-speed traveller.

If, as seems reasonable in view of various crucial tests, we accept Einstein's basic theory as correct, then it is possible to show by reasonably simple arguments that if a person is moving past a yard-stick at say $^7/_8$ of the speed of light, then to him it will seem only half a yard long by any tests he likes to apply.

Now our young man of 20, before setting out on his

1. *Discovery*, December, 1957, pp. 505, 519.
2. *Nature, Lond.* 1956, **177**, 782, 784, 785; *ibid.* 1956, **178**, 680, 681; *ibid.* 1957, **179**, 865, 909, 1129, 1242.

travels, will inquire of an astronomer how far his destination is away, and, on being told, will work out the time for the round trip at $^{7}/_{8}$ of the speed of light—as, say, 45 years.

When he gets going, however, and has accelerated his ship up to speed, he finds that every yard is only half a yard and every mile is only half a mile, and so he gets back in half the time.

All the rest of the predictions from Einstein's theory have been checked experimentally; can we check the clock paradox? The answer is Yes we can in a slightly indirect way.

In a particular type of atomic disintegration a very short-lived particle—a " meson "—is produced. There is more than one kind of meson but each kind can be recognised and distinguished from the others.

If the particular type in question is made in the laboratory it " lives " for about $^{1}/_{1,000,000}$ of a second before changing into something else. It is known from experiments with rockets and high-altitude balloons that this same kind of meson is created when a certain kind of cosmic-ray particle enters the top of the atmosphere at a height of say 100 km., and it is also known that the cosmic ray and hence the meson are travelling very fast—in fact at almost the velocity of light. These same mesons, which are known to start at 100 km. height, are still " alive " at ground level.

Even at the speed of light (300,000 km. per second) this journey must take about $^{1}/_{3000}$ sec., so the observer says: " The meson is still alive after $^{1}/_{3000}$ sec."; while the meson says: " My lifetime by laboratory tests is only 10^{-6} sec., so the journey of 100 km. took less than that."

An argument which is sometimes used to disprove the clock paradox runs somewhat as follows:

> The man in the rocket ship is moving at $^{7}/_{8}$ of the speed of light relative to the earth so he ages half as fast as an observer who stays at home. Very good; but, since motion is relative, then to the man in the ship he is the one who is stationary and it is the earth which is travelling at $^{7}/_{8}$ of the speed of light, so it will be the stay-at-home on earth who ages half as fast as the man in the ship.

The fallacy lies in forgetting that, while relative motion at uniform velocity is completely symmetrical (in other words, no observer can say " I am truly at rest and the other man is moving "), relative acceleration is not symmetrical, for the man being accelerated feels an unmistakable force for as long as the acceleration lasts. The man in the rocket is not therefore interchangeable with the stay-at-home observer; he has undergone acceleration and has felt it happen and is so unmistakably " labelled ".

Some cosmic-ray particles are believed to travel from other galaxies so fast that a flash of light starting at the same time would be only 2 seconds ahead when it reached the earth. If we could find a way of speeding up a space ship to such a velocity the crew would grow only a few seconds older on a journey of thousands of years to a distant galaxy and back; for them it would indeed be " time travel " into the future.

In theory (present-day theory) nothing can travel faster than light, but a hundred years ago the theoreticians would not have put much money on the atom bomb or nuclear-power station. If we ever succeed in travelling faster than light, then who knows what can happen? The crew of a space ship may grow steadily younger and outdo the famous young lady [3] by returning some years before they were born.

3. The Faber Book of Comic Verse; p. 335. London, 1946.

In England Now

A Running Commentary by Peripatetic Correspondents

ON both sides of the Atlantic we have met physicians affectionately known as Shifting Dullness by those who accompany them on their rounds. This is not the only occasion when doctors have applied, in descriptive or in playful mood, one of their own terms to their colleagues. Think of Proctalgia Fugax, for example, the surgeon (not a proctologist as it happened) who earned his name from the fleeting character of his visits to his hospital, and from the trail of criticism and even rancour that he left behind. Old Acid Reflux, by comparison, was always around, albeit ready to complain or condemn. Phlegmasia Alba Dolens need scarcely be described—a physician with gout and an anal fissure. His antipathies were not so violent as A.R.'s, but were felt more persistently and corrosively. The Latinist would say that before all other men his mind was a " mens conscia recti ". No doubt peripatetic correspondents could be similarly described. On a bad day I often feel that I am a clot, so perhaps I should stake a claim for Thrombophlebitis Migrans.

* * *

Sometimes a simple classification of birds is as useful to the aspiring ornithologist as one of diseases to the medical student. Perhaps the following will help my fellow peripatetic to distinguish between the main groups of birds.

Anything *very* large and white is a swan. All birds by the sea are sea-gulls. Smaller ones with red breasts are robins. All the rest are dicky-birds.

One other tip. Occasionally, while touring our roads, one may see a sharp tern or a humber snipe. These are not generally regarded as avian. In towns another trap for the enthusiastic amateur is the bird that hops off its perch on the pavement to walk across the road just in front of your car. This bird, the greater nitwit, is best put to flight by a blast from the horn. This species is most safely seen from a distance, so *do* buy those glasses.

* * *

The phone rang beside my bed. " . . . Police Station here. Could the doctor please come and examine a man arrested for being drunk in charge of a car? " I could. Wearily I dressed and set off. I was introduced to the accused and began the ritual formula.

" I am a doctor. I have been called by the police to examine you to see whether or not you are fit to drive a car. Do you agree to my examining you—or would you like your own doctor to see you?" He wanted his own doctor—and no-one else.

" Who is your doctor?" " I don't know. I have just registered with him. I haven't even seen him yet." He set off, followed by the inspector, to phone home to find out.

Twenty minutes later the pair returned. " His doctor is out on a call," said the Inspector. " What is his name?" I asked. " I don't know," replied the accused, " but his phone number is . . ." " That's my number " I said. " I must be your doctor!" " Then you may examine me!"

The only problem now is who pays my fee. The Police who called me out? The accused who called me out? Or both?

* * *

Intestinal obstruction by a fæcolith the size of an *American* golf-ball (*Lancet*, Aug. 8, 1959, p. 87), and published with a St. Andrews qualification from Dundee! My suspicions are confirmed. Golf is not a game, it is a disease—an obsessional neurosis.

* * *

In the Garden.—XII

OUR FEATHERED FRIENDS

Venison
Is rarely a garden denizen.
Which is just as well because when we had a stray roe-deer,
Oh, dear!

Letters to the Editor

FRENCH MEDICINE

SIR,—Dr. Delafresnaye's paper of April 11 does not give a correct impression of the organisation of the highly individualised French medicine; and, from official information sent me from France, I venture the following remarks.

The basis of academic French medical organisation is the teaching hospitals' *internat* (which, of course, bears no relation to the American internship). This *internat*, which Dr. Delafresnaye so summarily dismisses, is a genuine French institution, born of the French Revolution, and for this reason as difficult to understand outside France as, for example, the status of our Royal Colleges is difficult to understand outside this country.

The *interne des hôpitaux* reaches this high status through a double competitive examination. First comes the competitive examination of the *externat*, open to relatively advanced undergraduates. The teaching hospitals of Paris have 413 posts of *externe* (roughly, external clinical assistants), for which 2579 *selected* undergraduates compete in a year. There is thus one *externe* for every six candidates (not for six "students", because, as everywhere, only a minority of students compete for academic posts).

Next comes the *internat*—the most difficult competitive medical examination in the world. It is open only to *externes* who have reached the end of their medical studies but have not presented the thesis which would give them their doctorate and the right to practise outside hospital. (This condition is made so as to limit the number of candidates.) The standard demanded corresponds to our M.R.C.P. and F.R.C.S. *combined*. There are yearly on average 1056 candidates, all very highly selected *externes* of many promotions, for 97 posts. At this stage there is no specialisation, equal medical and surgical knowledge and skill being demanded.

After his nomination, the *interne* works in hospital as a responsible assistant physician or surgeon, usually resident. French teaching hospitals are divided into *services* (corresponding to our firms) of about 80–100 beds, each firm being under a chief physician or surgeon—French physicians or surgeons usually limit themselves to one hospital, which they visit daily—assisted by one, or rarely two, *internes*. (The organisation of the professorial units is more complex.)

The *interne* is responsible for the patients the whole twenty-four hours. He sees them early in the morning, accompanied by the *externes* and the students. Later in the morning the chief physician or surgeon comes and the visit is repeated. At the end of the morning in medical firms there may be an autopsy, performed by the *interne*, often in the presence of the chief physician; and in surgical firms there are operations performed by the chief surgeon, aided by the *interne*, or by the *interne* himself. After lunch the *interne* does the laboratory work relating to his patients, either in a small laboratory attached to his firm, or in a central hospital laboratory, or in a laboratory of the Faculty, the Sorbonne, or the Institut Pasteur. In the evening the *interne* makes another visit to the wards, alone this time, so as to concentrate more on difficult cases and to talk intimately with the patients—the characteristic *contrevisite*—and the evenings are devoted to further study.

The *interne* is appointed for four years, and he changes his firm, and thus his chief physician or surgeon, every year. It is easily understood what clinical skill is acquired with this tremendous work, through which the patient is followed by the *interne* in the wards, the laboratory, and the autopsy table. After these four years the *interne* is free to present his thesis, to settle in consulting practice with his highly esteemed title of *Ancien interne des hôpitaux*, or—alas—to prepare himself for the other competitive examinations leading to the higher academic posts.

It is because the *internat*, with its special clinical and holistic outlook, has been the keystone of French medicine for more than a hundred and fifty years that my fellow *interne* and friend, Prof. Robert Debré, has left it intact in his drastic project of reform. It is a necessary stage for all higher academic appointments, not only for physicians and surgeons, but also for anatomists, physiologists, pathologists, and biochemists. This explains the essential features of French medicine—its predominantly clinical spirit, its holistic and humanistic outlook, and the clarity of the exposition of medical problems. The great esteem in which this institution is held by all Frenchmen was demonstrated by the splendid official celebrations held four years ago, under the active leadership and participation of the President of the Republic and the French Government, in honour of the hundred and fiftieth anniversary of the *internat* of Paris.

London, W.1. A. P. CAWADIAS.

AN EXAMINATION PAPER FOR . . . ?

SIR,—I was interested and a little amazed by the letter of Aug. 15 from Dr. Walther and Dr. Raeburn.

I am an examiner for the General Nursing Council for England and Wales, and principal tutor of a general hospital (576 beds) in London. Students come here from many parts of the world, consisting of a good cross-section of the community; therefore I write with experience of the average *not* the exceptional student.

I heard no comment or criticism about the examination mentioned from any candidate in this hospital, and they all come to discuss freely their examination papers with myself and my colleagues. All thought the questions fair and appeared to like the papers generally.

100% passed in this particular paper on medicine and medical nursing; indeed one candidate only failed in the examination. This I think proves that the questions set were well within the reach of the average student.

It is essential that the questions are interpreted at the correct level. It would appear that your correspondents have failed to appreciate this.

We are endeavouring to see that our patients are intelligently nursed, and these questions are only to be answered from a nursing angle, with a sound knowledge.

London, W.10. M. B. B. LARGE.

SIR,—The letter by Dr. Walther and Dr. Raeburn spotlights the absurd position at which we have arrived in nurse-training. It may be, as they say, that the main reason for setting a difficult paper is that it is easier to mark, but I believe that the fundamental origin of our troubles is much deeper and that their attack should have been on the whole conception of nurse-training today.

The present policy has little regard for producing either good nurses or sufficient nurses. It is orientated instead towards a misguided attempt to "raise the status of the nurse" and is producing bad doctors rather than good nurses. The concentration of the student nurse's attention on study for an examination such as the one quoted diverts her attention from basic nursing, with the result that this has now reached a very low level even in hospitals of good repute. Bedsores, which were once regarded as almost a crime, are now not uncommon even among short-stay patients, and hospital cross-infection has reached alarming proportions. The training is producing the type of nurse whose reaction to cross-infection is not to review her technique but to rely on antibiotics prescribed by the houseman; her reaction to the sleepless patient is not to use her skill to induce natural sleep but to try to persuade the houseman to prescribe a hypnotic drug.

As part of the attempt to raise the status of the State-registered nurse, and in order to cope with basic nursing, it became necessary to invent a new grade, that of the assistant nurse, which by its very title is proclaimed as a lower grade and

which is rigidly separated from the elite. I wonder how many of your readers realise that there are two mutually exclusive streams in nurse-training, and that it is impossible for a State-enrolled assistant nurse to become a State-registered nurse except by starting all over again.

The high standard of training for the State-registered nurse is largely unnecessary. While it is true that very advanced technical skills may be required of sisters and senior nurses yet the fact remains that the great majority of patients require only the application of expert practical training and skill in promoting comfort and confidence, in ensuring attention to the skin and natural functions, and in administering simple treatments. Skill at this level is not necessarily associated with the capacity to absorb theoretical knowledge and pass written examinations. The natural feminine instincts are the important background for the good nurse, but many excellent girls are deterred by the prospect of either having to live with the word "assistant" for ever or of failing in the examination for State-registered nurses.

Every girl entering the nursing profession should first undergo a relatively short (say two years) course of training and experience in basic nursing, and, after passing a strict but mainly practical and oral examination, should be awarded the title of "nurse". This would ensure that the body of the profession had a proper conception of what their fundamental job is. Those nurses with the will and the capacity should then be given the chance to progress to higher grades and specialties with appropriate titles, and they would undertake the responsibility for the more advanced techniques and would be well qualified to supervise those who were content to remain simply as nurses.

This return to single-stream training would make a major contribution towards eliminating our present troubles, and I believe that it is also the best policy for "raising the status of the nurse" and restoring the profession to the honoured position which it previously held.

Great Yarmouth. K. J. GRANT.

SIR,—Have your two correspondents ever studied the syllabus for the Certificate of General Nursing? This carefully planned curriculum does not attempt to educate a student nurse to any standard other than that required for State Registration. It *does* attempt, over a period of three years' teaching, by a combination of practical and theoretical work, to equip her to take her place as a qualified nurse able to carry out a doctor's orders with understanding and intelligence.

The candidates who answered the questions quoted are the potential staff-nurses and ward-sisters of the future. What do doctors require of the nurses in charge of the care of their patients?

Are they content to have willing handmaidens blindly carrying out their instructions, ignorant of the effects of drugs and any complications arising from treatment, or do they value the support of a staff of nurses with an intelligent understanding of their patients' conditions, who can be trusted to observe and report accurately because they have a knowledge of the causes, effects, and possible treatment of disease?

What are the views of these State Final candidates concerning the standard and type of question they are required to answer? As a sister tutor with twelve years' experience of nursing education, I have never heard any complaints, and my nurses would not hesitate to be frank with me. On the contrary, the general view has always been that the questions were sufficiently varied both in wording and content to be covered by their experience on the wards and their lectures in the classroom.

The nurses do not face the G.N.C. papers without full preparation, and they understand this. At all times it is borne in mind that the causes, prevention, symptoms, and complications are of importance in a nurse's training, but that the nursing observation and care are of paramount importance.

A State-registered nurse is responsible for the safe custody of drugs in her ward, and for their correct administration according to the orders of the doctor. Is she, despite this important fact, not to be given any knowledge of the uses, doses, and dangers of such drugs? No good nurse would presume to doubt a prescription written by her medical superior, but on the other hand she should not have her intelligence underestimated by some members of the medical profession.

Why do your correspondents not understand that in the question on unconsciousness in the paper to which they refer, the candidates are asked to *discuss* the treatment and *describe* the management of a case. Firstly, all trained nurses should, and do, know the common causes of unconsciousness and the possible treatment which they can anticipate will be ordered by the doctors. Secondly, the management largely includes the nursing care and nursing observations, for which most doctors are grateful to their nursing staff.

Questions are not set to "trap" candidates, and no papers are "easy to mark". All take time and concentration.

Finally, a sensible, suitable candidate for student-nurse training could hardly be "frightened off" nursing by reading questions set for an examination for which she will not be entering until at least three years later.

Should she not, because of an inadequate educational background, be able to assimilate the course, there is a separate training for State Enrolment which is designed for those who show promise of being good practical nurses, yet are unable to participate in a fuller nursing education.

King George Hospital, Ilford, Essex. V. K. JONES
Principal Tutor.

INTESTINAL OBSTRUCTION BY FÆCES IN THE ILEUM

SIR,—In 1945 I reported the unusual circumstance of formed fæces in the ileum associated with stenosis due to cicatrisation of isolated inflammatory lesions.[1]

6 in. of ileum was choked with putty-like fæces above a fibrous stricture in a patient admitted to hospital with ileal obstruction of two days' duration. A sausage-shaped lump 6 in. long was palpated in the right iliac fossa, above and parallel with the groin, suggesting the diagnosis of an ileoileal intussusception. At operation, because the ileum could not be emptied by massaging its contents through the stricture, the affected loop of bowel was resected and anastomosed end to end. The patient made a good recovery.

My interest in the condition has been revived by two similar cases of fæcal obstruction of the ileum.

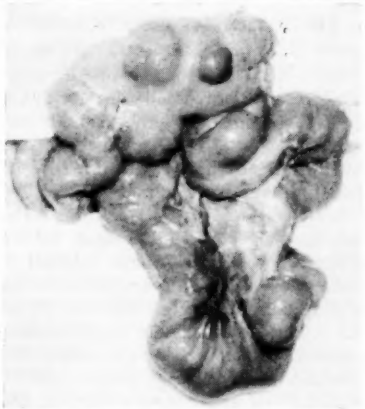
CASE 1.—A Sinhalese woman, aged 26, was admitted to the General Hospital, Colombo, on July 3, 1958, at 12.30 P.M., complaining of intermittent colicky abdominal pain since waking that morning. The pain was in the right iliac fossa and radiated across the abdomen. She had taken a decoction and had vomited twice afterwards. The bowels had been opened twice, the stools being of normal consistence. With each bout of pain, she felt a lump within the abdominal cavity. She had had similar bouts of colic with the formation of a lump about once a month for the past year. She was three months pregnant when the pains started, and had since been delivered of a full-term baby.

The abdomen was not distended, the abdominal wall was soft, and a sausage-shaped mass 6 in. long was felt in the left hypochondrium. At 1.45 P.M. the lump was palpated in the left iliac fossa where it was parallel with the groin. A rectal examination was made, and there was no blood on the examining finger. Despite this, the lump was thought to be an ileocolic intussusception which had reached the pelvic colon.

At operation at 2 P.M. the peritoneal cavity was opened through a McBurney incision. There was a slight excess of serous fluid. The sausage-shaped lump was in the left iliac fossa, and manipulations to reduce the "intussusception" were started. As this was impossible the mass was exteriorised

1. Paul, M. *Brit. J. Surg.* 1945, **32**, 127.

(see figure). It was made up of closely convoluted coils of small intestine filled with putty-like fæces and enclosed within a transparent peritoneal membrane. The bowel distal to the mass was empty and contracted. There was only 3 in. of ileum distal to the lump, and 2 in. proximal to it was a second similar mass of adherent convoluted coils of ileum, but containing only gas and fluid. The ileum was reduced by dissection to a long tube, which was now devoid of a peritoneal covering. The fæces in the distal coils of ileum were massaged onwards into the cæcum, and the abdominal wound was closed. The patient made an uninterrupted recovery and left hospital on July 15.



Convoluted coils of bowel delivered through McBurney incision. Proximal loops above and distal loops dissected free below.

She was readmitted on July 27 because of abdominal pain of three weeks' duration. The pains came on after meals and lasted two to three hours. There was no vomiting or nausea, and the bowels were opened daily. A sausage-shaped lump was palpable in the right iliac fossa parallel to the groin. The percussion note over the lump was resonant. The abdomen was not distended, and visible peristalsis was not observed. A plain radiograph with the patient in the vertical position showed grossly dilated gas-filled coils of jejunum with fluid levels.

At a second operation for intestinal obstruction, on Aug. 4, the abdominal cavity was opened through a left paramedian incision. The mass was made up of convoluted adherent coils of bowel anchored to the anterior abdominal wall on both sides of the middle line. These coils were dissected free; they involved the terminal ileum, cæcum, and ascending colon, and contained gas but no fæces. A lateral anastomosis 1 in. long was made between the ileum and the ascending colon, short-circuiting these coils. The patient made an uninterrupted recovery and left hospital on Sept. 4.

The re-formation of a mass by the adherence of convoluted coils of the terminal ileum, and the adhesion of the cæcum and part of the ascending colon, is an unusual pathological process of obscure cause. Prof. F. C. W. Illingworth suggested that specific mention be made of the normal thickness of the terminal ileum as evidence that this was not a case of Crohn's regional ileitis.

CASE 2.—A Sinhalese man, aged 26, was admitted to the same hospital on Sept. 20, 1957, at 12.20 A.M., having had abdominal pain for eight hours, with nausea, but no vomiting. There was tenderness of the lower abdomen, and the whole abdominal wall was rigid. The pulse-rate was 114, and the temperature 99°F.

At operation two hours later a McBurney incision was made. There was seropus in the peritoneal cavity and filmy adhesions, but no free gas. Through a right paramedian incision the intestines were inspected. The terminal ileum was distended with fæces of a putty consistence, and there was a perforation of its anterior surface, which would just admit the tip of a finger. The bowel proximal to the obstructed loop was of normal diameter. The perforation was closed with Lambert sutures, and the fæces in the ileum were milked into the colon. The abdomen was distended for three days after operation, then his condition improved and he left hospital on Oct. 1.

There was no obvious reason for the formation of solid fæces in the terminal ileum, nor for the bowel perforation. The patient's relatively good condition eight hours after the onset of the acute abdominal pain was probably because the perforation was effectively sealed by the solid fæces. This was borne out by the absence of free gas in the peritoneal cavity at the time of operation. Fæces may have collected in the terminal ileum because peristalsis was sluggish on account of subacute Crohn's disease, but this is only conjecture.

These cases suggest that slowing of the passage of chyme through the ileum by a stricture or by a fixed tortuosity of the bowel determines the conversion of the chyme to fæces by the absorption of water. The transient passage of chyme through the ileum does not normally permit of such absorption.

We do not know why this does not happen more often. With slowly progressive obstruction of the ileum, the sequence of events does not cause stasis of chyme. The chyme is propelled through the narrowed segment without difficulty so long as the diameter is greater than that of a lead pencil. When the obstruction becomes narrower than this the bowel propels the chyme through the stricture by an increased effort associated with circumumbilical pain and with visible and palpable peristalsis. With further narrowing of the lumen the stage arrives when the peristaltic efforts fail to propel all the chyme through the obstruction, and then events move to a crisis. The chyme dammed behind the stricture distends the bowel more and more causing abdominal swelling and vomiting, and if the condition is not relieved within a few days death will ensue. But at no stage is there stasis of chyme in the ileum, whereas in the cases described above such stasis did occur, and the sequence of events was different.

As far as I know this condition has not been reported previously, but I hope that similar cases which have been observed but not recorded may now come to light.

University of Ceylon. MILROY PAUL.

SENSITIVITY REACTION TO GALLAMINE TRIETHIODIDE

SIR,—Gallamine triethiodide ('Flaxedil') is generally thought to be less liable than D-tubocurarine chloride ('Tubarine') to evoke the production of histamine and to cause bronchospasm,[1] though histamine is released when the drug is applied to rat diaphragm in vitro.[2] In clinical practice allergic reactions to gallamine appear to be rare. Only two cases have been reported in the literature,[3] and the manufacturers know of no others. I thought it worthwhile, therefore, to record the following case:

A plump healthy woman of 42 was admitted for excision of vulval cysts. Induction was with thiopentone 0·5 g. mixed with gallamine 80 mg., and anæsthesia was maintained with nitrous oxide and oxygen. Within two minutes of the injection of the thiopentone-gallamine mixture an intense flush of face, neck, and upper chest developed. Many white urticarial weals, up to $^3/_4$ in. in diameter, appeared. There was no evidence of bronchospasm, and the muscle-relaxant effect appeared normal, respiration returning after about five minutes. Two hours later the weals were still present, the erythema was unchanged, and some œdema of the face had developed. This gradually passed off over three days, without treatment.

Two weeks later one drop of the undilated solution of gallamine (40 mg. per ml.) was injected intradermally into the patient's forearm (about 2 mg. gallamine). Thirty minutes

1. Smith, R. H. F., Thomas, D. L. C. *Brit. med. J.* 1951, i, 1151.
2. Mushin, W. W., Wien, R., Mason, D. F. J., Langstone, G. T. *Lancet*, 1949, i, 726.
3. Lopert, H. *Anæsthesia*, 1955, **10**, 76.

later there was an area of erythema about 1 in. in diameter around the injection site, erythema of the face and neck, slight œdema of the face, and two 1/2 in. weals on the neck. This reaction persisted for two days.

This patient is obviously highly sensitive to gallamine. She had an urticarial rash after eating lobster some years ago, but the only other feature of interest in her past history is that, eight years ago, she had a left salpingo-oophorectomy for tuberculosis. Unfortunately, the hospital where this was performed is unable to supply any details of the anæsthetic, but it is possible that she may then have received gallamine for the first time, and become sensitised.

British Military Hospital,
Rinteln, Germany. D. A. WALMSLEY.

BEDPANS

SIR,—The Nuffield Provincial Hospitals Trust in its report on the Present Sterilising Practice in Six Hospitals [1] draws attention to the unsatisfactory state of affairs in regard to the efficacy of bedpan washers. We have been conducting a bacteriological survey of the various stages of bedpan cleaning by mechanical methods and certain conclusions seem to emerge:

1. The pressure in the cold-water supply must be adequate to give a strong jet of water, otherwise the bedpan will not be cleaned.
2. The process is facilitated if soft, crêpe-type (soluble) toilet-paper is provided in preference to "Government Property".
3. The "frying-pan"-type bedpan with hollow handle often cannot be cleaned in a bedpan washer, because the hollow handle gets blocked with fæces.
4. A good jet of hot water (over 60°C) for 30 seconds will disinfect an apparently clean "frying-pan" bedpan.
5. The 'Perfection' bedpan is harder to disinfect, because, when it is stood up on end, a large pool of fluid forms which usually remains infected.
6. Both types of bedpan have curled-in edges, giving a sitting surface. The space under these edges cannot be inspected for the presence of visible contamination.
7. We feel, therefore, that a new bedpan should be designed to overcome all these disadvantages.
8. To save the expense of replacing existing cleaning equipment the new design should fit that equipment.

We hope to publish our full results in due course.

Department of Pathology,
Whipps Cross Hospital,
London, E.11. W. W. WALTHER
E. G. MILLWOOD.

DIMINISHED RESPONSIBILITY

SIR,—Justice and metaphysics do not mix; in fact, I doubt if metaphysics mix well with anything practical. The important points are the purpose of punishment and the relationship of the code of law to public feeling.

Determinism and causality are necessarily general or theoretical in application since—as Bergson emphasised—nothing is ever exactly similar to anything else that has happened before, will happen afterwards, or is happening elsewhere at the same time. The detailed application of determinism cannot be submitted to proof. It is an article of faith. There never was a more logical or less self-deceiving theologian than Cardinal Newman: he believed that neither faith nor unbelief rested on reason.

Much discussion of this nature is the construction of logical edifices based on dubious premises and built of constructed definitions. As Bertrand Russell summed it up, free will is true in the only sense that matters. Of course Dr. Maddison (Aug. 15) is right on the emotional side. One must feel of the worst criminals as one feels of the starfish tearing open the bivalve, of the cat and the mouse, and of the mongol child, a sorrow that the world is as it is.

Catterick. D. HAMILTON.

1. London, 1959. See *Lancet*, 1959, i, 455.

SELECTION AT CELLULAR LEVEL AND THE ECOLOGY OF TUMOURS

SIR,—That the tumour-cell divides under conditions in which the normal cell does not divide led very early to the speculation that the tumour-cell had undergone genetic change. This view was not unreasonable and in one form or another gained wide acceptance. Less reasonable, however, is the almost universally held view that the tumour-cell is degenerative. This view is based upon the fact that the tumour-cell loses differentiation; but the argument is subjective and depends upon an erroneous conception of the differentiated cell. The useful industry of the differentiated cell is worthy of notice, but it should not obscure the fact that in its mode of origin and in its subsequent metabolism the differentiated cell is clearly revealed as an adaptive variant which has colonised and exploited an unoccupied ecological niche in the internal environment, and is intent upon its own salvation. Looked at objectively, the cell community has every appearance of being a mixed population of variants competing for the resources of an equilibrium environment, and intercellular relationships have every appearance of constituting a form of Natural Selection not unsimilar to that which operates in the outside environment. The metazoan is in fact a complete environment in miniature. The tumour-cell is an over-successful competitor.

To see in true perspective the "usefulness" of the differentiated cell and the un-usefulness of the tumour-cell one must appreciate that Natural Selection in the outside environment has perpetuated the more effective patterns evolved by the operation of selection as between cells in the internal environment. The differentiated cell is part of an effective pattern, the tumour cell is part of an abortive pattern, but both cells are adaptive variants and both are the product of selection at cellular level. The tumour-cell out-selects the differentiated cell in the same manner as the differentiated cell out-selects its embryonic rivals.

The question arises as to how the cell achieves adaptive variation. In the case of the whole animal in the outside environment, where no direct cause-and-effect relationship exists, adaptive variation is achieved in the face of improbability, by the selection of such advantageous genes as are randomly available in the gene-pool of the species: it is the environment which is selective. In the case of the cell, again it is the environment which is selective; but the relationship between the environment and the cell is direct, and according to the valency of its own gene-pool so the cell either can or cannot exploit an alternative niche presented by the environment. If in fact the cell can exploit such a niche, then it is reasonable to suppose that an all-or-none principle will direct it either to remain in its existing niche or to change, according to which alternative is least restraining.

Turning back to the tumour-cell, there is some slight occasion for hopefulness in the fact that many tumours arise at an age when it could be reasonably supposed that the internal environment is beginning to exert an increasing level of biochemical restraint; and on general ecological grounds one could suppose that in time the biochemical support of the normal cell might well prove to be an effective means of out-selecting the undesirable adaptive tumour-cell. That, however, is purely incidental to the present purpose which is to attempt only the integration of the tumour-cell into the wider picture of biology.

Colchester,
Essex. MICHAEL FROST.

ANGLO-GERMAN MEDICAL SOCIETY

SIR,—Preliminary inquiries have shown that there is considerable interest among British doctors in the furtherance of Anglo-German relationships in the field of medical science and medical practice. A similar body of interested doctors exists in Germany and it has been decided to attempt the formation of an Anglo-German Medical Society, without prejudice to other international associations, and with the possibility of affiliation as occasion arose. The object of the society would be, in the first instance, the promotion of visits and exchanges between British and German doctors engaged in all types of medical practice, teaching, and research. There are many other activities that could be undertaken by such a society but space does not permit of their discussion here.

It has been found most opportune to hold the Joint Inaugural Meeting of both the British and the German sections of the proposed society in London at 6.30 P.M. on Sept. 9. Would any doctor who is interested in the formation of this society, and who has not been reached by previous circulars, please communicate with the second of the undersigned?

Department of Pharmacology and Therapeutics, Queen's College, Dundee. W. WALKER.
Department of Chemical Pathology, St. Mary's Hospital, London, W.2. E. KAWERAU.

EXAMINATION BEFORE ADOPTION

SIR,—I have recently read the regulations made in connection with the examination of infants and children under the Adoption Act, 1958, which is now in force.

With one exception, the new requirements for the medical examination seem to be a great improvement, but I am puzzled by the insistence upon doing a Wassermann reaction upon every infant to be placed for adoption, irrespective of the result on the mother's blood.

If the maternal W.R. has been found to be negative during the pregnancy in question the situation is in no way different from that in any other pregnancy, though in either case it is necessary to be certain that the result of the W.R. does not refer to a previous pregnancy.

If there is any doubt about the mother's W.R., or if a result is not available, then I would agree that a test should be done on the child and that this should not be done earlier than the age of 6 weeks.

As the regulations stand, a vast number of unnecessary W.R.s will have to be done. Many children's officers to whom I have spoken have expressed their concern at the practical difficulties involved, which may necessitate sending an infant long distances across the country merely to attend someone who can extract the necessary 5 ml. of blood.

Bridge of Weir, Renfrewshire. JOHN BLACK.

OPERATION RIP VAN WINKLE

SIR,—I read with interest Dr. Stern's article of July 25. I feel that this matter is of great importance to all of us working in the mental field, and, because of the lack of uniformity in approach to rehabilitation, any contribution to this end should be welcomed.

Certainly all patients, from the earliest possible day of their admission to a mental hospital or to a neurosis unit, should be occupationally "rehabilitated". Occupational therapy should be included in the overall scheme of treatment so as to make fullest provision towards this end.

We at Mabledon Hospital have worked along these lines for over 12 years—occupying our patients 6 hours daily in a 5-day week; acute cases work in occupational-therapy departments while chronic patients work in what we call utilitarian occupational-therapy departments in building, carpentry, painting, metalwork, and kitchenwork.

The question of payment, which Dr. Stern mentions, is very important. At Mabledon patients are paid from 2*d.* to 5*d.* per hour, according to their ability to concentrate on the work they are doing rather than their output. We always try to avoid giving the patients so-called "pocket money". We feel that patients (psychotics and neurotics alike) should not receive money or goods in kind unless they have earned it as above. The very nature of their ailments tends towards acceptance of a theory that the community at large, from nearest relatives to the State, are under some obligation towards them.

I fully agree with Dr. Stern (we have been doing it throughout the past 12 years) that we must reproduce—or at least try to do so—a normal working atmosphere alike with a factory, office, or laboratory, when the patient undergoes treatment for his mental disease. We all know that many patients have difficulties, as Dr. Stern says, for they like to shut themselves in their own small worlds.

Not the least important factor is the question of referring patients, who have recovered sufficiently to warrant their discharge from hospital, to the rehabilitation units of the Ministry of Labour.

We have availed ourselves of this service several times, but in most cases found that they could not settle down in those units. As much as one would like to see mental patients mixing with "convalescents" from pure physical diseases, it seems impractical from our experience. Some of the patients, rightly or wrongly, felt that they were branded by their fellow rehabilitees as "mental." Others felt that too few activities are offered to the men at industrial rehabilitation units of the Ministry of Labour.

It is essential that we, in neurosis units or mental hospitals, should have greater facilities for starting as many workshops, with different crafts, as possible. What is so very noticeable in most hospitals is the absence of facilities for the rehabilitation of female patients in "domestic sciences". Many women patients feel frustrated when they have to go to the occupational-therapy departments to do weaving, embroidery, and so forth. They would much prefer to do cooking, housework, &c.

This would help us to have continuity of treatment in both men and women from the beginning to full remission, ending in return to the community.

Mabledon Hospital, Dartford, Kent. G. BRAM.

INHIBITION OF INTRINSIC FACTOR BY PERNICIOUS ANÆMIA SERA

SIR,—In his interesting article (Aug. 15) Dr. K. B. Taylor demonstrates that the sera of some patients with pernicious anæmia inhibit hog intrinsic factor (I.F.) activity, and he concludes that the inhibitory factor may be a true antibody. He mentions that in an investigation published a year ago [1] I did not find an I.F. inhibitory effect in the sera of 6 patients with untreated pernicious anæmia.

In this same article,[1] however, it was clearly shown by an almost identical method that I.F. inhibitory effect could be demonstrated in sera from 19 out of 27 patients with pernicious anæmia given oral treatment, whereas no such activity was found in sera from 14 normal persons.

This inhibitory effect was in several cases of much greater magnitude than that now found by Taylor in patients treated by injection or untreated. Further it was demonstrated that this I.F. inhibitory factor could not explain the intestinal blockage found in several orally treated patients—for instance, it was found to operate against human intrinsic factor.

The I.F. inhibitory factor found in orally treated patients with pernicious anæmia, and now also in untreated patients and patients treated by injection, is presumably one and the same thing. The much more massive findings in orally treated patients could fit into the picture of

1. Schwartz, M. *Lancet*, 1958, ii, 61.

(auto ?) immunity against I.F., as these patients are continuously given I.F. and this treatment could act as a booster dose on a preformed weak antibody. The reason why it was not found in the 6 untreated patients could be (as Taylor suggests) that I used twice the amount of I.F.; but even with this dose of I.F. I have later found the I.F. inhibiting substance in some cases of untreated pernicious anæmia—a finding which further supports the theory of auto-immunity.

The I.F. inhibiting factor is apparently less species-specific than I.F. itself. It has been found to operate not only against hog and human I.F. but also against rat I.F., and it may even inhibit a normal—but achlorhydric—patient's own I.F.[2] That it can be a true antibody is also supported by the finding that it is located in the globulin portion of the serum-proteins.[2]

Medical Department B,
Bispebjerg Hospital,
Copenhagen.

MICHAEL SCHWARTZ.

OPERATION FOR GALLSTONES: A TRIBUTE TO TAIT

SIR,—It is a very great pity that your leader of Aug. 8 contains no reference to the pioneer work of England's greatest surgeon of the operating-theatre, Lawson Tait. In respect of cholecystotomy Tait stands foremost among such worthy contenders to fame as Fabricius, Zambeccari, Petit, Müller, Richter, Thudichum, Kocher, Koenig, Sebastian, and Sims. Following the unpremeditated operation of Bobbs, and the Sims' planned but unsuccessful case, Tait performed the first *premeditated* and *successful* cholecystotomy (1879) and this was followed in the space of a few years by a series of 14 with only 1 death. He was and remained the champion of cholecystotomy versus cholecystectomy [3] and, it would appear, in the context of your annotation, of cholecysto-lithotomy also. Oschner is reported to have said: "Lawson Tait in 1879 performed the first successful operation of cholecystotomy and to Tait more than any other surgeon of this period is due the credit of placing the surgery of the liver and gall-bladder on a firm basis."

Queen Elizabeth Hospital,
Edgbaston, Birmingham.

A. J. H. RAINS.

THE "CHILL-CHASER" FOR CONTROLLED THERMAL IRRIGATION

SIR,—The extensive use of physiological saline irrigation in neurosurgery means that such solutions must be readily available, and at the right temperature, at all times throughout the operation. Every neurosurgeon at one time or another has been harassed by being given irrigating solutions which were either too hot or too cold to place on the meninges or brain. The usual techniques of adding cold or hot water in sufficient quantities to alter the temperature in the reservoir of water usually only roughly achieves the desired temperature and there is a need for a method to keep solutions at exactly the right temperature on the operating-instrument table. Recently we have used with good success an electrical heating unit termed the 'Chill-chaser'.

This instrument is capable of keeping within a fraction of a degree of the desired temperature at all times a sizeable quantity of solution. We have employed one chill-chaser to keep a larger reservoir of water at the desired temperature in reserve. The second chill-chaser is kept in the solution that is being immediately used. The scrub nurse transfers the appropriately heated reserve solution into the receptacle in which a second heating unit is constantly monitoring the temperature of the solution that will be handed to the surgeon (see figure).

The neurosurgical scrub nurse transferring the reserve irrigating solutions at proper temperature by use of a large ball-syringe.

The instrument is ideally suited to our purposes since it may be readily set to 102° or thereabouts. It is inexpensive, can be autoclaved, and is explosion-proof. We recommend that the standard two-wire power-cable be replaced by a three-wire one, in order to ground the body of the chill-chaser and eliminate any shock hazard. This the manufacturers are willing to do on special order.

This technique has been used in the neurosurgical operating-rooms at this medical college for the past year, with better temperature-controlled irrigating solutions.

The 'Chill-chaser' is made by the Still-Mann Equipment Co., 429 E. 164th Street, New York 56, N.Y.

Medical College of Georgia,
Augusta, Georgia.

GEORGE W. SMITH
CRAIG W. GOODWIN.

NUCLEAR CHROMATIN OF ANENCEPHALIC FŒTUSES

SIR,—It is satisfactory to see that Dr. Bearn's findings (July 11, p. 24) accord with those of Polani and Claireaux [1] on 12 anencephalics, and those of Perrin and Benirschke [2] on 35. I have examined a further 16 anencephalics at or near term and found no discrepancy between sexual phenotype (including morphology of gonads) and "nuclear sex" (skin and internal organs).

A quantitatively normal chromosome complement in one of our anencephalic fœtuses was found and reported by Dr. Harnden. The material submitted to him by Dr. Stewart behaved similarly.[3] These findings then would dispose of the possibility that sex reversal may account for the apparent excess of females among anencephalics born at or near term.

Another reasonable hypothesis to account for the female preponderance at or near term is early selective loss by miscarriage of *male* anencephalic embryos. Males and females would be equally susceptible to and affected by anencephaly, but the disturbed sex ratio at or near term would reflect a discrimination against affected males. This hypothesis could be tested by determining the sex of anencephalic embryos lost as miscarriages in the first weeks of pregnancy. A few of these, in reasonable state of preservation, have been reported in the medical literature, and it was possible to re-examine and "sex" 6 of them (details to be published). They were "chromatin

2. Schwartz, M., Lous, P., Meulengracht, E. *Nord. Med.* 1959, **62**, 1125.
3. Tait, L. *Brit. med. J.* 1885.

1. Polani, P. E., Claireaux, A. E. *Lancet*, 1957, ii, 599.
2. Perrin, E. V., Benirschke, K. *J. clin. Endocrinol.* 1958, **18**, 327.
3. Harnden, D. G., Briggs, J. H., Stewart, J. S. S. *Lancet*, Aug. 15, 1959, p. 126.

negative ". In 4 of the embryos the gonad was identified as a testis, while in 2 its differentiation was insufficiently advanced to allow histological classification.

Medical Research Unit,
National Spastics Society,
Department of Child Health,
Guy's Hospital, London.

PAUL E. POLANI.

AN INEXPENSIVE CLINICAL CAMERA FOR EVERYDAY USE

SIR,—Last year Gardner[1] described an automatic clinical camera, in use at the Radcliffe Infirmary. 35 mm. film was used, and there were two close-range focusing positions giving photographic fields of $4^1/_2$ and 8 in. square. Illustrations showed that this camera was similar in size and appearance to a portable X-ray machine. There was no reference to price, but this was obviously an expensive piece of equipment, beyond the means of most hospitals.

It seems worth drawing attention, therefore, to the excellent results in clinical photography which can be obtained with an ordinary 35 mm. hand camera, coupled to a simple frame and flash-gun.

The camera illustrated here (figs. 1–3), and in use in the Isle of Wight hospitals, is an Agfa 'Sillette'; the flash-gun clamped to the frame behind it is the standard Kodak shop article, and the frame itself, which can be sterilised by boiling, home-made locally. This equipment, plus two standard Kodak close-up lenses focusing respectively at 10 in. and 18 in. (similar distances to those of the Radcliffe model), was bought by the medical advisory committee for a total cost of £22.

1. Gardner, A. M. N. *Lancet*, 1958, i, 1316.

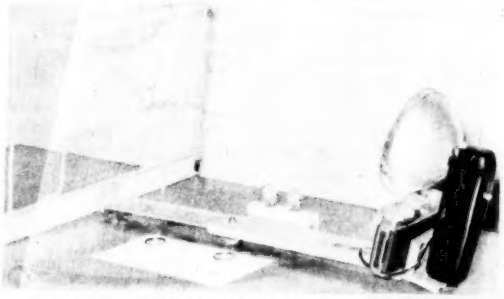


Fig. 1—Camera and attachments.

Fig. 2—Close-up field focused at 10 in. from lens front.

Fig. 3—Larger field focused at 18 in. from lens front.

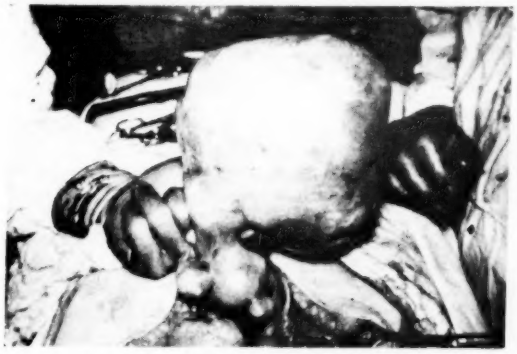


Fig. 4—Print made from colour transparency.

The whole outfit is designed to be portable and "foolproof" in operation. "Instructions for use" (see below) are printed on a card kept with the camera which is in the charge of the operating-theatre technician, and available to any member of the staff who wishes to use it in theatre, wards, outpatient department, or even at another hospital. A book is kept in which the staff-member records the subject and number of exposures taken. An annual allotment of film is subscribed by the medical advisory committee, but transparencies remain the property of the consultant taking them.

Since our apparatus was made Messrs. Kodak have put on the British market a similar one which can be used with a 'Bantam colorsnap', 'Retina', or 'Retinette' camera. It appears, however, to suffer from the drawback of having only one close-up focusing distance, at 7 in.

It is not suggested that a cheap camera of this kind can have the same capacity for specialised work as the Radcliffe one. On the other hand, for ordinary clinical photography it is probably capable of producing equally good results, with the advantages of greater flexibility and of requiring no special skill to operate. The accompanying illustration (fig. 4) of a fibroid uterus at operation is typical of the standard of transparency produced by members of the hospital staff.

Instructions for Use

There are three main parts—the camera itself, the flash-bulb attachment, and the focusing view-finding frame. The camera is removed from its leather case and the frame clamped on. The flash-bulb attachment is then screwed on behind the camera and its electric cable connected to the special attachment on the camera which synchronises it with the shutter. The frame is adjustable to the two distances at which pictures are to be taken, and there is a different lens which simply springs on to the front of the camera lens for each distance.

To work at 10 in. from lens front.—Lens No. 3 (recognisable by three yellow bars on its rim) is placed over the front of the camera. The frame is adjusted to 10 in. and the aperture set at *f*16. For both distances the shutter speed is 1/60 and the focus on the camera scale 3 ft.—i.e., the shortest focusing distance obtainable.

To work at 18 in. from lens front.—Apply lens No. 1 (one yellow bar on rim) to camera front and set the aperture at *f*11 or, for a very dark object, *f*8. Adjust the frame at 18 in. and remove the smaller frame inserted inside it as this gives the size of the 10 in. picture and will, at 18 in., obscure the picture if not removed.

A flash bulb is used for each exposure and when inserting a new one it is important to see that the small wires at the base of the bulb are in contact with metal and not asbestos in the socket.

Lastly, the green lever on the right-hand side of the camera is a delayed shutter release and should be kept at setting X, not V, unless the delayed action is required.

I should like to express my thanks to my colleagues, Mr. Frank Heckford, Dr. J. C. Harland, and Dr. J. H. L. Conway-Hughes, for their helpful cooperation, to Mr. J. J. O'Donoghue for the loan of the transparency, and to our hospital photographer, Mr. Norman Paterson, for his skill and expertise in making the frame.

Royal Isle of Wight County Hospital,
Ryde, Isle of Wight. E. H. J. SMYTH.

TOP BRANCHES OF THE VASCULAR TREE

SIR,—We were interested to read your annotation [1] drawing attention to epidemiological differences between coronary and cerebral thrombosis.

The results of investigations into the serum levels of cholesterol and pre-β-lipoprotein in groups of male patients suffering from various conditions including schizophrenia, dementia, cerebral thrombosis and coronary thrombosis were recently reported [2 3] to the International Association of Gerontology, at meetings held in Sunderland and Nancy. Amongst other findings the figures obtained from these groups showed that whilst, as expected, the pre-β-lipoprotein and cholesterol were high in those patients who had had a coronary thrombosis they were significantly lower in those patients who had recently suffered a cerebral infarction.

These results led to the surmise that there may be substantial differences in the biochemical pathology of coronary and cerebral thrombosis either before or after the occurrence of the infarction. In fact other workers [4] have also observed little or no change in the beta/alpha lipoprotein ratio on serum electrophoresis in patients with cerebral arteriosclerosis, and we know of no positive observation indicating that the serum-cholesterol is indeed raised after cerebral thrombosis. We therefore welcome your opinion that much more attention must be paid to analysis of factors contributing to cerebrovascular disease as distinct from cardiovascular disease in general.

Cherry Knowle Hospital, Ryhope, near Sunderland. A. GILLIS H. MERSKEY.

EARLY DIAGNOSIS OF PREGNANCY

SIR,—It is often desirable to diagnose the cause of amenorrhœa at a very early date—for example, in the unmarried woman, the woman in whom there is some contraindication to pregnancy, and in the woman, often of menopausal age, who is in a state of considerable mental agitation and distress at the prospect of pregnancy. Such cases may not be strict medical indications for invoking immediate " special investigations ", but the fact remains that an early accurate diagnosis is vital to correct management, especially in general practice.

Urinary gonadotrophin tests have a number of disadvantages. They are cumbersome, because a specimen of urine has to be collected, packed, and posted, sometimes to a very considerable distance. This specimen may not reach the laboratory intact, and even if intact may be insufficient in quantity. Assuming these obstacles have been overcome, the results are not always accurate, and, in any case, may not be received until ten days or even longer after the patient's first attendance.

What is required is a simple and safe test which will give an accurate diagnosis early. In the past few years I have carried out hormone tests for pregnancy on 46 patients using 1 ml. of an oily injection of progesterone 12·5 mg. and œstradiol monobenzoate 2·5 mg. (' Disecron ') on each of two consecutive days.

In the absence of pregnancy, withdrawal bleeding may be expected within 7 (or at the most 14) days. This is similar in principle to the oral test using tablets containing ethisterone 10 mg. and ethinylœstradiol 0·05 mg. (' Orasecron '), but in view of the distraught state of mind in so many patients I prefer to give two daily injections rather than risk an incorrect diagnosis through a misunderstanding by the patient over the dosage of the tablets.

Of the 46 tests 43 were strictly accurate as proved by a follow-up. Another was accurate but with spotty bleeding and one menopausal patient showed equivocal results. The only inaccurate diagnosis was in a patient who shortly afterwards underwent an operation for the removal of ovarian cysts.

I consider these results to be strong evidence that the hormone test is at least as accurate as the gonadotrophin tests. I have not encountered, nor have I heard of, any fœtal abnormalities resulting from its use, and there were no cases in which it disturbed the pregnancy. Furthermore, the cost of the test (basic N.H.S. cost 6*s*. for 2 injections) compares very favourably with the cost of urinary gonadotrophin tests.

Bristol. D. H. FORSTER.

DOCTOR AND FACTORY

SIR,—Dr. Noy Scott (June 27) calls my letter " ill-timed " because the Central Ethical Committee of the B.M.A. has now asked the Occupational Health Committee to suggest a revision of the Ethical Rules (or Code) for Industrial Medical Officers. The letter was written before this step was taken; the statements of fact were accurate at the time of writing, and the statements of opinion and arguments were intended to show the relevance of the Ethical Rules to the far more important question of the future pattern of occupational health services, which was under discussion in your columns. If the members of the two committees concerned are convinced by the arguments, their task will be lightened; if they are not convinced, they will ignore them. In either case no harm can result and a contribution may possibly be made to an amicable settlement of a problem which has for years been a source of no little irritation to industrial medical officers. I share Dr. Noy Scott's hopes for such a happy outcome.

West Midlands Gas Board, Birmingham. F. H. TYRER Chief Medical Officer.

ADVERTISEMENTS OF PROPRIETARY DRUGS

SIR,—Since the beginning of the National Health Service the Pharmaceutical Trade has made a practice in their advertisements of quoting the basic National Health Service price of any product; they also extend this practice to their postal circulars. I submit that this price should be of relatively little interest to those members of the profession within the National Health Service who prescribe for their patients on form E.C.10. There is, however, a large and growing body of practitioners who are solely or mainly engaged in private practice; to these doctors the retail price to the general public and especially to their patients of any drug they prescribe is a matter of great concern. May I therefore suggest that you, Sir, consider asking all advertisers in your journal to state the actual retail price of their products to members of the general public on prescription or over the counter.

London, N.W.11. C. H. HOSKYN.

1. *Lancet*, Aug. 8, 1959, p. 94.
2. Merskey, H., Gillis, A., Attwood, E. C., Woodford-Williams, E. Proceedings of the 1st Meeting of the European Clinical Section of the International Association of Gerontology, Sunderland, 1958. *Geront. clin.* 1959, **1**, 137.
3. Gillis, A., Merskey, H. Programme (Rapports) of the 2nd Meeting of the European Clinical Section of the International Association of Gerontology, Nancy-Vittel, 1959, p. 101.
4. Martin, E., Scheidegger, J. J., Berthoud, E., Garrone, G. *Bull. schweiz. Akad. med. Wiss*, 1957, **13**, 192.

Notes and News

A NEW NUTRITION JOURNAL

IN the foreword to *Nutritio et Dieta* [1] the editors deplore the ignorance of the medical profession on the subject of human nutrition, an ignorance which in many European countries is aggravated by lack of university teaching. Their new journal will try to remedy this, and it aims to keep doctors up to date with general reviews on problems of fundamental interest, and to help dietitians to take a larger share in clinical and laboratory investigation. The first paper, by Professor Trémolières, of the Laboratory of Human Nutrition in Paris, admirably attains these objects. It is a scholarly and sensible review of the use of nutrition standards in the evaluation of a diet, beginning with a classical account of the need for proteins, fats, and carbohydrate and ending with practical recommendations in a list of foods providing a good diet. Three original papers follow, which all deal with some aspect of dietary fat and arterial disease. They break little new ground, and one recommends treatment for patients with atheroma which is hardly orthodox in this country.

The ideas behind this new journal are sound, and we hope that the right sort of contributions will be forthcoming to make it a success.

THE 'BODILINE' CHAIR: AN AID TO THE HOME CARE OF THE DISABLED

Dr. Margaret Agerholm writes: Long periods of sitting in a chair, with the back upright and the feet dependent, can prove very exhausting for severely disabled patients who cannot adjust their position from time to time. Swelling of the feet can also prove a tiresome complication. These patients may have to be transferred back to bed one or more times during the day, and they may even have to stay there all day for lack of suitable help.

Fig. 1.

We have found this chair (figs. 1 and 2) of considerable value in the home care of these patients.

The hinge device under the seat allows the patient to change position from sitting to lying—and vice versa—in one movement. Either the patient himself pushes or pulls on the arms, or his companion presses on the back or the footpiece of the chair. Relatively little force is required, and patients with quite weak arms can change the chair's position.

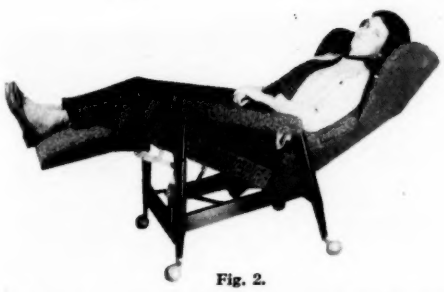


Fig. 2.

The back and seat are of latex foam and sufficiently comfortable to allow use throughout the day. 'Shepherd' castors can be fitted to allow the patient to be moved from one room to another, and to bring him up to a useful table height.

We have used the chair mostly for patients with severe paralysis from poliomyelitis, but it probably has a much wider application. It is particularly valuable for people with residual respiratory paralysis, since they tend to get most breathless in the upright position, and often have to lie back quickly when they are tired—or when their breathing-aid breaks down.

The chair has an added attraction in that it is in no way "invalid equipment" but a standard commercial product.

It is manufactured by Greaves & Thomas Ltd, Clapton, London, E.5, to whom inquiry may be made.

1. *Nutritio et Dieta*. Vol. 1, no. 1. Pp. 72. Published by S. Karger, Basle and New York. Swiss francs 30, $7.20 for 1 volume of 4 numbers.

DISINFECTION OF BLANKETS

FOR the simultaneous disinfection and laundering of blankets high-temperature washing, above 60° C, is the easiest to apply. Such washing can seriously injure woollen blankets, however, although the recently introduced cellular cotton blankets are relatively unharmed by it. It has now been shown that damage to woollen blankets is caused not by high temperature alone, but by the combination of high temperature and agitation.[1] A new high-temperature washing process with reduced agitation, will clean blankets without damaging them and will destroy most bacteria as well.

ASSOCIATION FOR THE STUDY OF MEDICAL EDUCATION

THIS Association is holding its second conference at the Royal College of Physicians, Pall Mall East, London, S.W.1, on Thursday and Friday, Oct. 15 and 16. The subject chosen is Methods of Learning and Techniques of Teaching, and it is hoped to analyse ways in which the student can learn from practical work and patients, from reading, and from his teachers. Different types of teaching and the student's incentives to study will be also discussed. The annual dinner of the Association will be held on Thursday, Oct. 15, and the annual general meeting after the conference on Friday, Oct. 16. Applications should be sent to Dr. J. R. Ellis at the college (with a fee of 3 guineas which includes the dinner) by Sept. 15.

University of Cambridge

The following degrees have been conferred:

M.D.—R. H. B. Mills, Cyril Rashbass, J. R. Rees.
M. Chir.—K. P. Abel.
M.B., B.Chir.—D. S. Bamford, A. E. Booth, Margaret A. Branthwaite, D. F. Cort, J. M. Dawson, Derek Denis-Smith, Peter Fells, C. J. Hunter-Craig, P. B. Jacobs, P. S. Lewis, Yung Wai Loke, J. G. Manson, Elizabeth C. Marcus, Robin Marsh, B. S. Meldrum, M. A. Message, I. S. Muir, R. M. Negus, Margaret H. Retter, Sylvanus Omereonye Wamuo, Frederick Warwick, Mary R. H. Webb, A. J. Yates-Bell.
M.B.—R. S. Hickling.
B.Chir.—G. F. Abercrombie, A. H. Abrahams, J. D. Allison, N. C. Barber, M. C. Barlett, P. J. F. Baskett, R. J. M. Bell, A. J. Black, P. L. Boardman, J. R. Bright, A. D. M. Bryceson, I. G. Chisholm, A. J. Costello, P. M. B. Crookes, D. H. Dick, Neville Dobie, R. J. Donovan, Peter Drinkwater, T. B. Duff, B. B. Edoo, J. A. T. Ellis, V. C. Faber, John Farmer, Geoffrey Farrer-Brown, R. W. Gabriel, P. J. Graham, B. E. C. Hale, C. N. Hales, K. M. Hambidge, R. W. McKay Hamilton, J. R. Harrison, M. T. Haslam, R. B. Hedworth-Whitty, Brian Higgs, G. H. Hillman, T. C. Hindson, N. J. B. Hitchcock, J. D. Hobay, P. N. Holberton, D. A. Hopkinson, P. J. N. Howorth, R. F. Hurding, Beatrice J. James, J. P. James, A. J. W. Jarvis, G. H. C. Jenkins, D. L. Jennings, C. J. A. Jephcott, D. H. Keeling, R. E. Kendell, E. A. Lazarus, N. E. F. Lever, D. M. Lewis, Barbara A. Lockley, Roger Lomax, J. M. Lunn, J. S. Macve, Brian Martin, J. S. Mather, J. W. Miller, M. C. Mitcheson, G. F. Norris, J. D. Parkes, M. J. Peckham, B. A. W. Perkins, L. L. W. Peters, I. C. Pitter, C. R. M. Prentice, Hazel M. Rawlinson, Max Rendall, Hazel M. Sargent, J. A. Savin, R. H. Secker Walker, C. L. Smailes, Peter Snell, D. P. Stables, J. M. S. Standley, F. A. Strang, R. B. Stenhouse, P. J. Swinglehurst, P. H. Tatham, R. E. Tattersall, R. T. Taylor, T. C. Taylor, J. S. H. Tooth, M. R. Turner, I. W. Wallace, E. N. Wardle, D. F. L. Watkin, J. N. Webb, Paul Williams, C. J. F. L. Williamson, J. M. Yong.

University of Birmingham

On July 11 the following degrees were conferred:

Ch.M.—D. J. Oakland.
Ph.D. (in the faculty of medicine)—D. A. Heath, Kurt Aterman (in absentia).
M.B.—Alan Rhodes, F. K. Wright (second-class honours); Richard

1. High Temperature Laundering of Woollen Hospital Blankets. British Launderers' Research Association and International Wool Secretariat. 1959. Pp. 25. Copies may be had from the scientific and technical department of the International Wool Secretariat, Dorland House, 18-20, Regent Street, London, S.W.1.

Baker, J. W. Bland, B. A. Boughton, Joan M. Brown, R. M. Brown, Angela R. Buckley, Annie R. Burgess, R. M. Clewlow, A. J. Cox, N. A. Dent, David Donaldson, Mary S. Duncan, Judith Ellison, Frederick Farmer, R. M. Finch, D. M. Fleming, Lalita M. Fooks, David Galliford, M. J. Gilbert, M. F. Grayson, L. H. Grove, A. W. Harris, Brian Hill, J. B. Hollins, June M. Hunt, Susan P. Jones, T. T. Jones, S. C. Kennedy, N. G. Lambert, Bozena Zofia Leoszko, Gillian K. M. McMullan, Jennifer P. Mansfield, A. B. Masters, J. F. Morris, J. T. Mucklow, R. W. Myers, C. D. Neal, Paul Omo-Dare, J. C. E. Parkinson, B. G. S. Peach, J. E. Perrin, A. J. Perrons, J. R. Perry, W. R. Plimbley, Kathleen W. Raine, P. M. Rainsford, A. L. Revell, Anne L. Riffkin, Paul Sadler, Phillida A. Sampson, Anne R. Schofield, B. J. Sealey, Thomas Shaw, J. R. Smethurst, A. E. G. Smith, Barbara G. Smith, C. S. Tyler, N. A. Ward, Romola I. Westwood, Janet A. Williams, P. M. Worrall, J. G. Wright; S. W. Clarke, J. H. Morris (in absentia).

On Friday, Oct. 9, at 3 P.M., Mr. A. L. d'Abreu, the newly appointed dean of the faculty of medicine, will give the inaugural address for the 1959–60 session. The ceremony will take place in the Arthur Thomson Hall in the new extension to the Medical School, which will be open for inspection.

Society of Apothecaries of London

Dr. Richard Trail has been elected master, with Dr. Charles White and Mr. A. M. A. Moore as wardens.

The following diplomas have been granted:

L.M.S.S.A.—H. S. Dickson, E. B. Lewis, I. B. S. Garewal, G. J. Mc Erwin, E. S. Dadabhay, D. M. Holmes, P. Havold-Arseth, A. Guest, R. Rogerson, R. A. M. Taylor, G. Stewart, M. C. O. Bax, K. A. H. Kubba, K. R. Bowles, S. G. I. Hamilton.

D.I.H.—A. B. Baillie-Hamilton, D. H. Ball, A. G. Berney, P. Blackledge, G. M. P. Boyes, T. Coates, J. L. Facer, F. Halliwell, J. W. Hill, J. E. L. Lahaise, D. C. Smith, J. H. Williams, A. P. Wright.

The Order of St. John of Jerusalem

The Queen has sanctioned the following promotions in, and appointments to, this order:

As Commanders.—P. S. Pringle, M.R.C.S., Air Commodore John Magner, M.D.

As Officers.—A. J. Amor, C.B.E., M.D., J. W. McK. Nicholl, M.D., D. I. Acres, M.R.C.S., Wing-Commander H. W. Whittingham, M.B., J. L. Temple, F.R.C.S., Elizabeth M. Anderson, M.D.

Royal Institute of Public Health and Hygiene

Sir Francis Walshe has been appointed the Harben lecturer for 1959. The lectures will be given at the Institute, 28, Portland Place, London, W.1, on December 8, 9, and 10, at 5 P.M. His subject will be the evolution of ideas in neurology during the past century, and the future of neurological medicine.

Epsom College

An extraordinary general meeting of the governors is to be held at the Medical Defence Union, Tavistock House South, London, W.C.1, at 4 P.M. on Friday, Sept. 25, to appoint a president of the College. Sir Miles Thomas has been proposed to succeed the late Lord Webb-Johnson in this office.

Remuneration of Clinical Psychologists

Under an agreement reached by Professional and Technical Whitley Council A, gradings, rates of pay, and conditions of service of clinical psychologists working in hospitals under the National Health Service have been revised. The new salary scales for full-time appointments are as follows:

Probationary period.—£580 × £25 (4)–£680.

Post-probationary period.—£735 at age 25, rising by £35 for each year of age to £910 at 30; thereafter four annual increases of £35 to £1050.

Senior.—£1025 × £50 (8)–£1425.

Principal.—£1425 × £60 (5)–£1725.

Top grade for special posts.—At least £1775, with four increments: £75 (3) and £100 (1).

Nutrition at the Cellular Level

The Scottish group of the Nutrition Society is holding a symposium on this subject in Aberdeen on Saturday, Sept. 19. Further particulars may be had from Dr. J. Davidson, Rowett Research Institute, Bucksburn, Aberdeen.

Interdepartmental Committee on Drug Addiction

This committee, of which Sir Russell Brain is chairman, has finished taking evidence from professional bodies and is now prepared to consider evidence from others. A list of questions on which they would take evidence may be had from the joint secretaries of the committee, Ministry of Health, Savile Row, London, W.1.

Control of Pests and Diseases

On Oct. 1 and 2, at the Royal Geographical Society, Kensington Gore, London, S.W.7, the Institute of Biology is holding a symposium on biological problems arising from the control of pests and diseases. The topics to be discussed include the possible consequences of the widespread agricultural use of insecticides, fungicides, and herbicides; problems in the control of the tsetse fly; effects of adding antibiotics to animal feedingstuffs; the results of disease control in tropical areas; and drug-resistant bacteria. The speakers will include Prof. T. H. Davey, Major-General Sir Gordon Covell, Dr. Eliot Slater, and Dr. Mary Barber. Programmes can be had from the Institute, 41, Queen's Gate, S.W.7.

The annual clinical exhibition of the Royal Northern Hospital, London, N.7, will be held during the week beginning Oct. 19. Exhibits will be on view each day from 9 A.M. to 9 P.M., and films of current interest will be shown at 8.30 P.M.

CORRIGENDA: *Estimation of 3-methoxy-4-hydroxy mandelic Acid in Urine.*—In this preliminary communication by Dr. M. Sandler and Mr. C. R. J. Ruthven (Aug. 15, p. 114) the words " cation-exchange resin " which appeared in the first line under " Principle ", the first line under " Reagents ", and the fifth line under " Discussion " should in each case have read " anion-exchange resin ".

Heberden Society and British Association of Physical Medicine.—In our account (Aug. 22, p. 162) of this joint meeting, the neologisms " axonostenosis " and " axonocachexia " suggested by Dr. Philippe Bauwens in his remarks on peripheral nerve lesions were mis-spelt.

Appointments

BANERJEA, SANTIMOY, M.B. Calcutta: school oculist, Durham.
FIELD, DOROTHY, M.B. Brist.: school M.O. to act as dental anæsthetist, Co. Durham.
MCCARTHY, D. M., L.R.C.P.I.: school M.O., Newquay area.
NAYLOR, STANLEY, M.B. Lpool, B.SC. Lond., D.P.H.: assistant divisional M.O., Wigan area.

East Anglian Regional Hospital Board:

BERRY, W. M., M.B. Lond.: registrar in psychiatry, Suffolk mental hospitals.
BISWAS, N. P., M.B. Calcutta, D.L.O.: E.N.T. registrar, Ipswich and East Suffolk Hospital.
BROAD, J. P., M.B. N.Z.: anæsthetic registrar, Newmarket General Hospital.
CARDOE, NEIL, M.B. Durh., M.R.C.P., D.PHYS.MED.: consultant physician, Norfolk and Norwich and Cromer hospital groups.
CHOWDHURI, S. R., M.B. Calcutta, D.O.: ophthalmic registrar, Ipswich and East Suffolk Hospital.
FLEMING, H. A., M.D. N.Z., M.R.C.P.: consultant physician in cardiology United Cambridge Hospitals and Regional Hospital Board.
LITTLE, A. F. M., M.B. Lond., F.F.A. R.C.S., D.A.: senior anæsthetic registrar, Peterborough Memorial Hospital and annexes.
PAPANASTASSIOU, N., M.D. Montpellier: registrar in psychiatry, St. Andrew's Hospital, Thorpe.
RAY, S. K., M.B. Calcutta: surgical registrar, County Hospital, Doddington.
SEN GUPTA, A., M.B. Calcutta: orthopædic registrar, Ipswich and East Suffolk Hospital.
WEBLIN, J. H., M.B. N.Z.: registrar in psychiatry, Fulbourn and Addenbrooke's Hospitals.

Cheshire County Council:

DEAN, HILDA M., M.R.C.S.: assistant M.O.
HOLLAND, ELIZABETH J., M.B. Manc.: assistant M.O.
KERSHAW, CITA V. C., M.B. Leeds: assistant M.O.

Colonial Appointments:

BOARDMAN, H. M. S., O.B.E., L.R.C.P.E.: D.D.M.S., Sierra Leone.
BOURDET, L. G. S., M.R.C.S.: M.O., Mauritius.
CHOA, G. W. S., M.B. Hong Kong, F.R.C.S., D.L.O.: specialist (E.N.T.), medical and health department, Hong Kong.
DELANY, L. F. B., M.B. N.U.I., D.P.H.: senior M.O., Tanganyika.
FRANKLIN, O. G., M.B. Cantab.: M.O., British Honduras.
GREBNEFF, G. A., M.B. Durh.: M.O., Northern Region of Nigeria.
HAMBLETT, E. P., M.B. Brist., D.C.H.: M.O., British Solomon Islands, South Pacific Health Service.
MALCOLM, Napier, M.B. Cantab.: M.O., Aden.
POTTINGER, D. A., M.B. W'srand: M.O. (grade B), Institutions, health department, Trinidad.
STEWART, J. G., M.R.C.S., D.O.M.S.: ophthalmologist, Falkland Islands.
THOMSON, C. R., M.B. N.U.I.: M.O. (grade C), Institutions, Trinidad.
WILLIAMS, P. N., M.B. Lond.: M.O., Uganda.
WILLIAMS, WALTER, M.B. Wales, D.T.M. & H., D.P.H.: senior M.O., Uganda.

Births, Marriages, and Deaths

DEATHS

WAILER.—On Aug. 21, suddenly at 77, Carlisle Mansions, London, S.W.1, Louis Wailer, M.D., L.M.S.S.A., husband of Jane.